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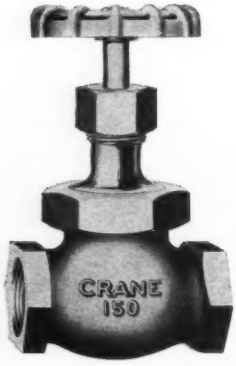

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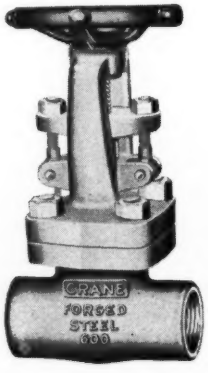

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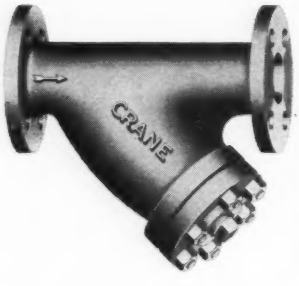

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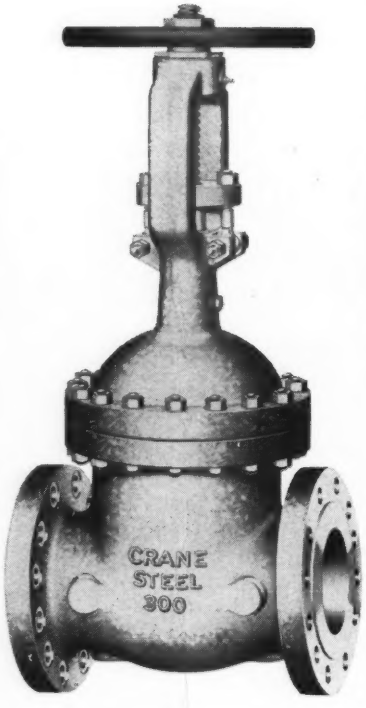

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What Lomax Does for Powerine

Prepared for publication in California Oil World—October, 1961

By W. E. LEMEN
Universal Oil Products Company, Des Plaines, Illinois

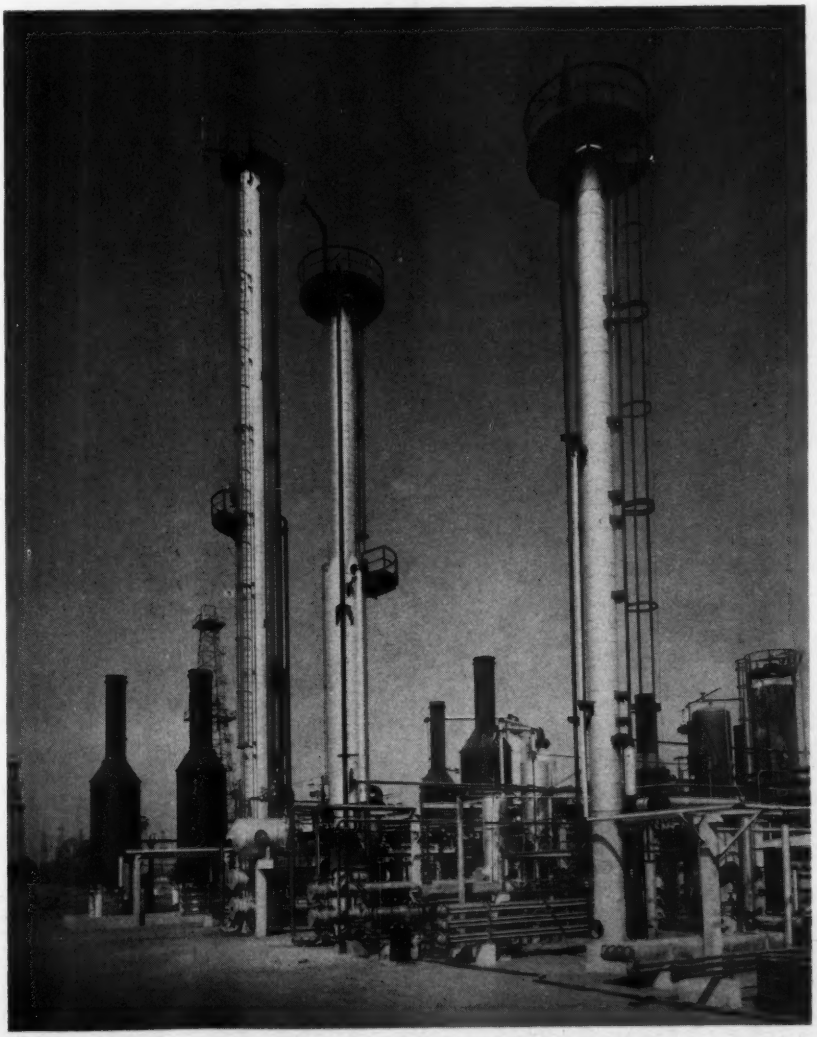
Powerine Oil Company achieved another first in oil refining at its Santa Fe Springs, California, refinery in August of this year. The world's first commercial Lomax* unit, which utilizes by-product hydrogen from catalytic reforming to convert gas oil to approximately 118% gasoline by hydrocracking, was put on stream in that month.

In October of 1953, Powerine installed a UOP Platforming® unit to become one of the first refiners on the West Coast to operate a catalytic reforming unit to produce high octane gasoline. As refinery throughput was expanded and gasoline octane requirements increased, a second Platforming unit was built in January of 1959. A third Platforming unit, designed to produce 100 clear octane (104 octane with TEL)

*Trademark.

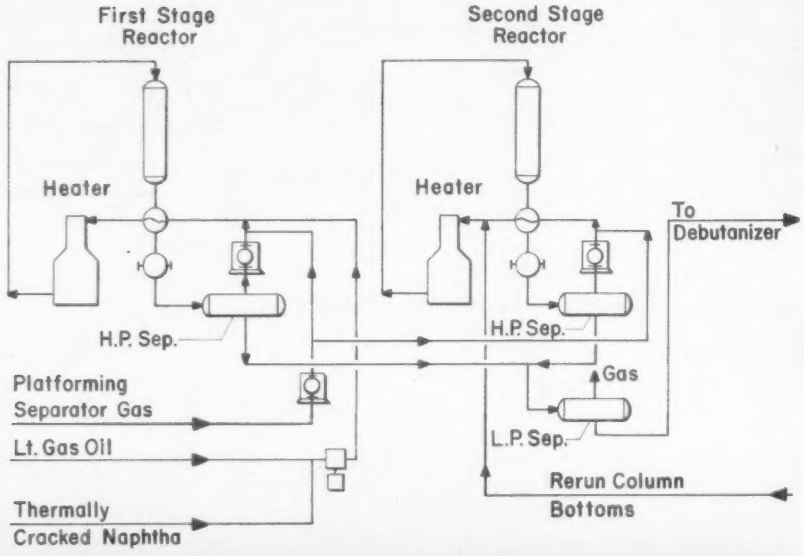
POWERINE LOMAX UNIT BOX SCORE

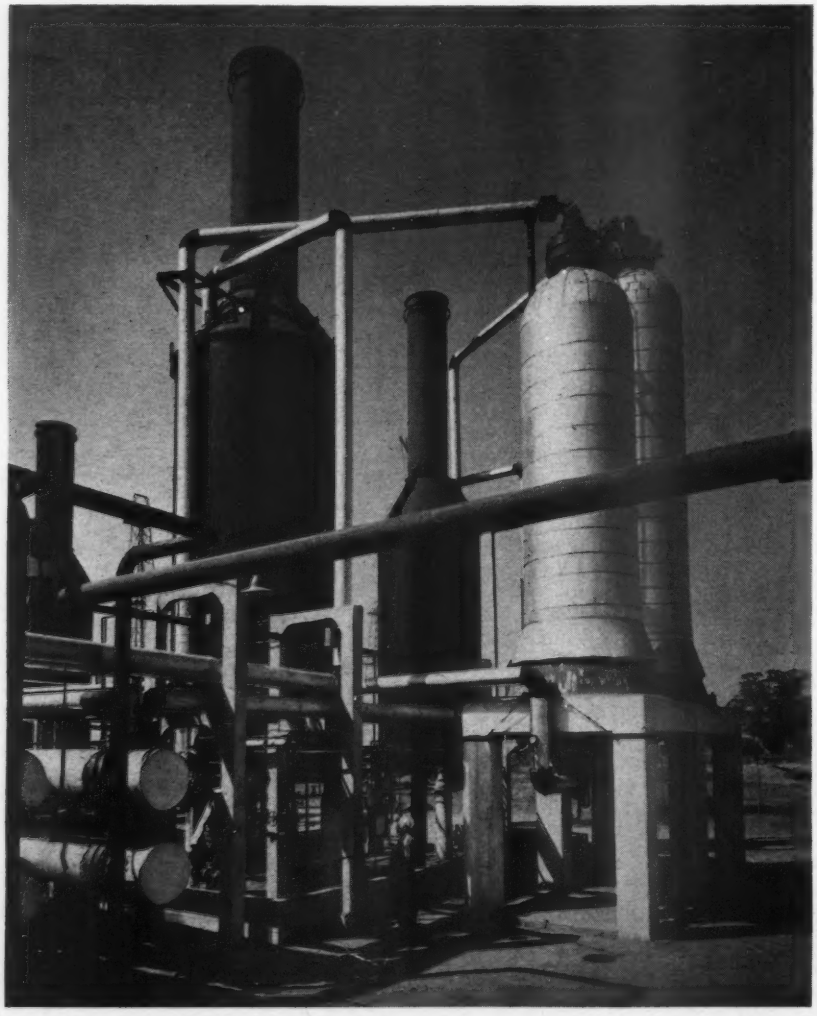
- 117.9% recovered yield of gasoline components.
- 20% increase in gasoline production.
- 5 number increase in refinery pool octane with Platforming.
- Premium and Super Premium grade gasoline below 10 bromine.
- High sensitivity gasoline for better road performance.
- Low-cost operation using gas from Platforming as only source of hydrogen.

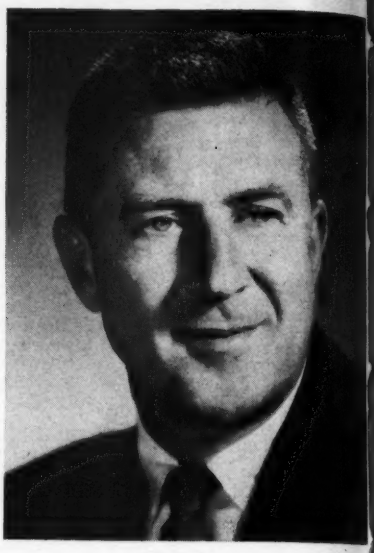


View of Powerine Lomax unit with fractionation section in the foreground. Tallest tower at the left is the rerun column; center tower is the stripper-debutanizer; tower at the right is the depropanizer. Heaters at the left are fractionator reboiler heaters. Lomax reactor and heaters may be seen in the background.

Figure 1
Process Flow Diagram
UOP LOMAX UNIT
REACTOR SECTION







W. E. Lemen

was built and placed in operation, along with the Lomax unit, to balance refinery operations with increasing market demands for high octane, low olefin content products. Powerine has made steady growth from a small topping plant to a well balanced, efficient refinery through the addition of UOP Two-Coil Thermal Cracking, Catalytic Polymerization, Platforming, Merox® treating, and now these new units.

The Lomax unit is designed to crack 1700 BPSD of gas oil or low-grade diesel oil, utilizing separator gas from the Platforming units as the only source of hydrogen. In addition, provision was made to process 500 BPSD of thermally cracked naphtha to remove undesirable nitrogen and sulfur compounds prior to charging this material to high severity reforming. This was done to avoid installing a separate unit for treating this material. A simplified process flow diagram of the reactor section of the Lomax unit is shown in Figure 1, and the fractionation section is shown in Figure 2.

Briefly, the gas oil and cracked naphtha are combined with a recycle hydrogen-rich stream and Platforming off-gas, heated to reaction temperature and charged to the first stage or treating reactor to remove impurities in the feeds. Following

PICTURE ON THE LEFT: Closeup of the reactor section of the Powerine Lomax unit showing vertical reactors on the right, fresh feed and recycle heaters in the center and high pressure feed to reactor effluent exchangers at the left.

PICTURE ON THE RIGHT: View of Powerine Lomax unit with reactor section in the foreground. Fresh feed and recycle reactors are at the left with vertical heaters adjacent. Fractionation section consisting of depropanizer, stripper-debutanizer and rerun columns is at the right. Heater at the right is the rerun reboiler heater.

cooling and a two-stage separation step, the treated material is stripped and rerun in order to separate gasoline components from the higher-boiling stock. The treated charge, or rerun column bottoms, is combined with recycle hydrogen and Platformer off-gas, heated to reaction temperature and charged to the second stage or cracking reactor. The products from the cracking reactor are then cooled and combine with the effluent from the treating reactor in a common low-pressure separator. The fractionation section includes a debutanizer and a depropanizer for high recovery of the butanes produced.

The Lomax unit capacity was based on utilizing the hydrogen-rich separator gas from 5500 BPSD of Platforming. Initial operations indicated that there was ample hydrogen to operate the Lomax unit at design throughput with only 4500 BPSD of Platforming. Because of this, the feed to the treating section was supplemented by the addition of 400-500 BPSD of virgin naphtha to provide additional nitrogen-free, sulfur-free charge for high-severity Platforming.

Typical throughputs, yields and inspections on the products as produced in the Lomax unit at Powerine are shown in Table I. In addition, these yields were adjusted to show the yields attributable to separately cracking the gas oil portion of the feed to extinction. Butane and C^3/C^4 fraction yields were corrected on the basis of actual analyses of the butane fraction as produced and the Platforming unit separator gases going to the Lomax unit. The adjusted yields are shown in Table II.

The unit operation is much like that of a Platforming unit. Only three men per shift are used at Powerine to operate the Lomax unit, the adjacent No. 3 Platforming unit and the hydrogen sulfide recovery facilities.

Operation of the No. 3 Platforming unit on the combined naphtha from the Lomax unit indicates that the Lomax naphtha is an excellent

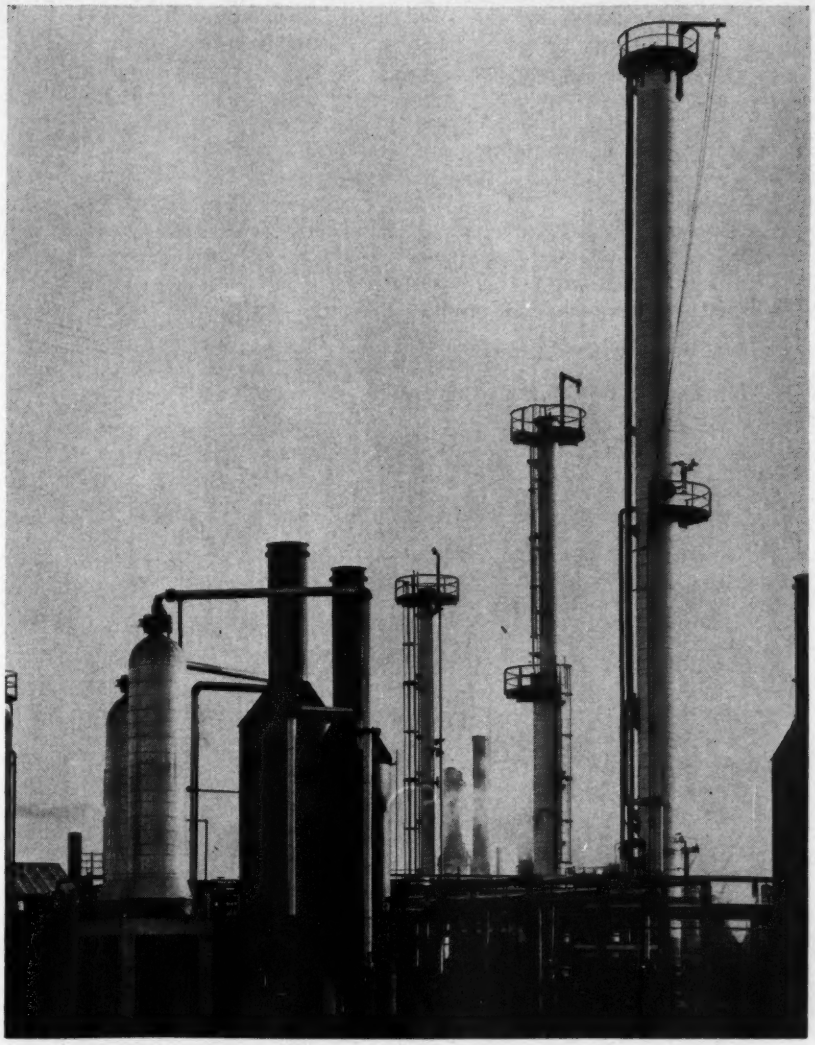
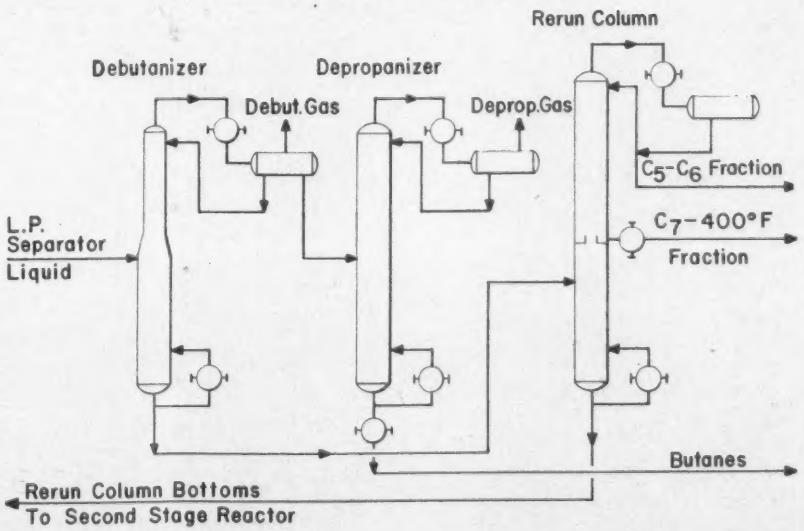


Figure 2
Process Flow Diagram
UOP LOMAX UNIT
FRACTIONATION SECTION



stock for catalytic reforming. Although the feed stock contained only about 50% of naphtha produced by Lomax cracking of gas oil, a 91.3% liquid volume yield of stabilized Platformate having an octane of 101.3 with 3 cc. of TEL, is obtained at Powerine.

The addition of the Lomax unit, together with the further expansion of Platforming capacity at this 16,000 BSPD refinery, has increased gasoline production by 20% without any increase in crude throughput. At the same time pool octane has been increased by five numbers. Other important advantages include lower sulfur content gasolines with lower sensitivity, which means better road performance at the same octane. Of particular importance in the Los Angeles area is the reduction of the olefin content to less than 10 bromine number for the premium and super-premium grades. This is well below the 20 bromine number limitation now being considered by air pollution control authorities.

Powerine plans to utilize all the hydrogen available from Platforming by supplementing the feed to the Lomax unit with thermally cracked gas oil, and possibly higher boiling virgin gas oil as well, in order to take maximum advantage of this versatile new process.

Table I
LOMAX UNIT
PLANT THROUGHPUTS AND PRODUCT YIELDS
Powerine Oil Company, Santa Fe Springs, California

Feed Stock	Bbl./SD	Vol. - %	Wt. - %
Virgin Light Gas Oil	1,597	61.8	58.0
Virgin Naphtha	418	16.1	13.5
Thermally Cracked Naphtha	572	22.1	19.4
Total Liquid Feed	2,587	100.0	90.9
Platforming Separator Gas (MMCF/SD)	(4.85)	—	9.1
Total Gas and Liquid Feed		100.0	100.0
Products			
Butane Fraction (Deprop. Bottoms)	323	12.5	7.8
C_5/C_6 Fraction (Rerun Col. O.H.)	488	18.9	13.3
C_7-400°F. Naphtha (Rerun Col. S. C.)	2,033	78.5	65.4
400°F.+ (Rerun Col. Bottoms)	60	2.3	2.1
Gas (Deprop., Debut., & Separator)	—	—	11.4
Total Products	2,904	112.2	100.0

Inspection of Feed Stocks	Light Gas Oil	Virgin Naphtha	Thermally Cracked Naphtha
Gravity, °API	32.2	52.0	44.0
Sulfur, Wt. - %	0.30	0.03	0.40
Basic Nitrogen, ppm	300	2	350
Total Nitrogen, ppm	800	2	750
ASTM Distillation, °F.			
IBP	260	156	240
10%	530	222	299
50%	580	272	254
90%	630	324	390
EP	679	395	425

Inspection of Products	C_5/C_6 Fraction	C7 - 400°F. EP Naphtha
Gravity, °API	88.3	53.7
Sulfur, Wt. - %	Nil	Nil
Olefins, Wt. - %	Nil	Nil
ASTM Distillation, °F.		
IBP	82	190
10%	91	225
50%	110	279
90%	141	341
EP	234	400
Research Octane + 3 ml. TEL	100*	79

*Blending Octane 50/50 with C_7-400°F. Naphtha.

Table II
LOMAX UNIT
PLANT YIELDS ADJUSTED FOR LIGHT GAS OIL ONLY
Powerine Oil Company, Santa Fe Springs, California

Charge	Bbl./SD	Vol. - %
Light Gas Oil (32.2° API)	1,597	100.0
Products		
Butanes (100% C_4)	257	16.1
C_5/C_6 Fraction	541	33.9
C_7-400°F. Naphtha	1,085	67.9
Total Liquid Products	1,883	117.9

Mobil Oil Co. Increases L.A. Harbor Facilities

An expansion program about to get under way at the marine terminal of Mobil Oil Company in Los Angeles Harbor will increase the company's storage capacity there to more than a million barrels of crude oil. Construction is scheduled to start soon on five tanks with a total crude oil storage capacity of 875,000 barrels. Present crude storage capacity is 320,000 barrels. Cost of the expansion program, which includes about three miles of 36-inch pipeline, is estimated to be in excess of $2,000,000.

The expansion will greatly facilitate Mobil's terminal activities in handling crude oil, special products, ballast, loading and unloading petroleum shipments and bunkering.

Mobil's new marine terminal tank farm will be located on Terminal Island on land leased from the Los Angeles Harbor Department at Seaside Avenue and Pilchard Street. The new site is about one mile northeast of Mobil's existing marine terminal storage area.

The terminal expansion, scheduled for completion in mid-1962, will enable Mobil to bring crude oil into Los Angeles Harbor in super tankers such as the 92,750-ton ship being constructed for an affiliate of the company at Goteberg, Sweden. The board of harbor commissioners recently authorized dredging to a depth of 51 feet the fairway from the breakwater to the harbor's supertanker terminal at Berth 46. Mobil's expanded terminal and new pipeline will enable a 630,000-barrel super tanker to discharge its cargo at a rate of some 40,000 barrels an hour. Present facilities at the company's marine terminal can handle only one 325,000-barrel tanker in a 24-hour period.

California Crude Suffers Deepest Cuts

By STARK FOX, Executive Vice President,
Oil Producers Agency of California

In California today, the price of crude oil is from 34 to 78 cents per barrel less than it was at the beginning of 1957.

Crude prices in other representative producing districts in the United States are from 8 to 27 cents per barrel less than they were at the beginning of 1957.

Heavier California crudes have taken the deepest cuts, both in relation to 1957 prices in California and in relation to the price action of heavy crudes in other domestic producing areas.

Posted prices published nationally show that 15 gravity crude in a representative producing state was $1.89 per barrel in 1957; it was $2.71 per barrel in California. Present postings for the out-of-state 15 gravity crude are $1.81 per barrel; they are $1.93 in California.

The price cut in California has amounted to 78 cents per barrel; in the other states to eight cents per barrel.

At the other end of the gravity scale, cuts in the price of 40 gravity crude in other states since 1957 have ranged from zero to 10 cents per barrel; in California they have been 34 cents per barrel.

It thus appears that of all domestic producers, the California producer has suffered the biggest loss in terms of crude prices since the general deterioration of those prices beginning in 1958.

This condition is true throughout the gravity scale. In the rest of the country, 20 gravity crudes have been cut from 8 to 27 cents per barrel; in California the cut is 62 cents; 25 gravity crudes, east of California, have been cut from 8 to 22 cents per barrel; in California the cut is 49 cents; 30 gravity crudes are down from zero to 17 cents per barrel; in California, 39 cents; 35 gravity crudes are off from zero to 12 cents per barrel in the rest of the country; in California, 39 cents.

One result of the exaggerated price deterioration in California has been a marked decrease in general field and producing activity of independent producers in the state.

Since 1957, to the end of July of this year, the drop in total California production was 117,711 b/d. Of this drop, independent producers suffered 73,626 b/d, or 62.6%. In 1957, independents produced 44.1% of California's daily oil output; in July, 1961, their share had dropped to 41.1% of the total. Furthermore, independents completed 928 wells in 1957, against 427 in 1960. Major companies completed 762 wells in 1957, compared with 822 in 1960.

Inadequate crude prices contributed to a drop of 501 in independent well completions between 1957 and 1960. Between the same dates, major companies increased their completions by 60 wells.

The failure of California crude prices, particularly in the heavier grades, to respond to economic indicators, all of which point to at least a partial restoration of the cuts made in 1958 and 1959, is mystifying.

Residual fuel stocks, which were 32,202,000 barrels at the end of 1958, were drawn down to 13,092,000 barrels on June 30, 1960, and have been brought back to approximately 17,000,000 today only because of the importation of some 15,000,000 barrels of Bunker C fuel in bond in the interim. Those imports, together with known intensive development plans of some of the larger companies in the older and low gravity fields of the San Joaquin Valley, give ample evidence that demand for heavy crude and residual fuel, its principal product, is firm, even brisk. Yet no restoration of the 80-cent cut in the price of heavy crude has taken place.

Heavy crude in particular appears to be undervalued at today's posted prices. In 1957, 15 gravity Signal Hill crude at a posted price of $2.71 per barrel was at a premium of 11 cents per barrel over the posted price of $2.60 for Bunker C fuel. Today, 15 gravity Signal Hill crude, posted at $1.93 per barrel, is under the Bunker C posting of $2.25 by 32 cents per barrel. In relation to posted prices for Bunker C fuel, 15 gravity Signal Hill crude has been cut 43 cents per barrel since the beginning of 1957.

Similarly, 20 gravity Signal Hill crude, at $2.89 per barrel in 1957, enjoyed a premium of 29 cents per barrel over the Bunker C posting; today that premium has dropped to 2 cents per barrel. This crude, 20 gravity Signal Hill, has suffered a loss of 27 cents per barrel in relation to Bunker C fuel prices since the beginning of 1957.

The winter season of high demand for residual fuel is approaching. That residual fuel is in demand is indicated by the efforts of the larger companies to augment their supplies not only by their importation of the product, but also by their plans to develop the heavy oil fields in the state's older producing regions. Heavy crude is undervalued in relation to product prices locally, in relation to heavy crude prices east of California, and in relation to light crude prices in California.

All indicators point to a restoration of the deep cuts in heavy crude prices that have occurred since the end of 1957. Such action is not only called for by present economic factors, but would also implement the national policy of maintaining a vigorous and healthy domestic industry in the interest of national security—the basis for the Federal oil import program.

Petrolite Corp. Awarded Contract to Build Nuclear Reactor

Kyoto University has announced that Internuclear Company (Clayton, Missouri, U.S.A.), subsidiary of Petrolite Corporation (St. Louis, Missouri), has been awarded a contract for the 1 Mw Kansai Research Reactor to be installed at Kumatoricho, Sennan-gun Osaka Prefecture.

The Kansai Research Reactor is the first major nuclear research facility to be built in Western Japan. It will be used for isotope production, medical research, irradiation effects research, and nuclear physics research. Each of these research efforts will advance the peaceful uses of atomic energy in Japan. An isotope laboratory, a hot laboratory, and a waste disposal system will be built to further peaceful utilization of the reactor. Later it is planned to install large nuclear engineering research facilities at the site.

Petroleum LORE and LINGO

By RICHARD SNEDDON

The urge to predict

Periodically as a result of listening to a stimulating speech or reading an exciting account of a scientific discovery, I get the urge to do one of these "where do we go from here?" stories. Changes are taking place at such a speed and in such abstruse areas of enterprise, however, in this age of educational superfluity that it is almost impossible to grasp minor trends in technological development, much less to depict evolutionary processes! It used to be said often by philosophical people that nothing is more stifling to scientific advance than custom and convention. Today these are no barrier to the untrammeled minds of the neo-researchers. In the entire history of industry, there has never been such a glut of Ph. D's so fully dedicated to the transmutation of inalterable theses and things, the wrenching apart of long cherished inseparables; and the reassembling of elemental components into hitherto undreamed patterns and materials that make Mother Nature look like and old synthetic fuddy duddy.

The changing scene

It is a bit pitiful really, the way organized curiosity is upsetting the conventional applecart and flouting all our cherished traditions. Everywhere, the assault of young, unbiased, and daring minds is bulldozing down the walls of prejudice and supposition and nowhere are the effects more startling than in the once comparatively drab and commonplace confines of the oil business. A mere hundred years old, this huge gangling entity suddenly finds itself reaching into the innermost phases of human existence. It furnishes power for gigantic manufacturing plants; nutritive elements for impoverished soils; spare parts for disintegrating anatomic organs; and appears to be on the verge of providing a substitute for blood plasma that may even be more effective than blood plasma itself.

Young ideas

These are just a mere sprinkling of the things that have taken place because new generations of oil people have declined to accept the stipulations of the old. There is a sort of unwritten social law that requires the young to respect the old and it can't be easy in some instances but, anyway, it is fortunate that there is no law requiring young people to accept old ideas as infallible and incontrovertible. When I began my oil career as a research chemist almost 40 years ago, we were concerned almost exclusively with the manufacture and ultimate quality of fuels, lubricants, paraffin wax, roofing and road surfacing materials, and a sizable list of solvents for a variety of purposes. There was evidence in the archives of the early development from petroleum of a printer's ink, and even then I believe we were already making a close-cut, clear paraffin oil that is still used today, more commonly perhaps as a hair dressing, but was then also popular as a lubricant for the nether reaches of the alimentary canal. There was some experimentation being carried on, too, in the field of thermal cracking, and an early dynamometer lab was exploring the cause and effects of detonation.

Early Conceptions

In the main, emphasis was still on the simple fractionation of crude oil into increments, each of specific boiling point range, and the subsequent treatment of these to rid them of deleterious substances and suit them more aptly to their respective purposes. No pronounced trend was appreciable yet towards transmutations or translations of hydrocarbons into the startling array of new synthetics we know today. Most of us knew that the paraffins were thoroughly stable compounds that yielded very little to high temperatures and pressures, and not at all to such a corrosive agent as fuming sulphuric acid. The idea of catalytic reforming was then just a vague dream in some inventive mind.

Splitting the Atom

There is no doubt that petroleum research was stimulated tremendously by two world wars, during the last of which the realization of nuclear fission gave a further boost to the already rapidly accelerating pace. The so-called "splitting" of the atom was an epochal event for which it would seem by the predicament in which we now find ourselves, that we were not quite ready. The discovery was by no means an immediate thing. On the contrary it was the result of concentration, and experimentation, by generations of physicists over many years. I had the pleasure, incidentally, of visiting with Dr. Carl Anderson of Cal Tech on the top of Pike's Peak in Colorado, back in the late 30's when he was studying the disintegration of atoms by cosmic rays, a bit of important basic research for which he was later awarded the Nobel Prize.

Constitution of the Atom

Until comparatively recent times, the atom was the ultimate in the divisibility of matter. The word "atom", indeed, comes from the Greek atmos, meaning "indivisible". But it doesn't fit any more. Every schoolboy now knows that an atom is in itself a little world of many components, all held together by innate affinities and forces that are far from being absolute. In fact, they are just as vulnerable to opposing power as were the hapless Cincinnati Red Legs. When the splitting of the atom first became a reality Fred Allen, the comedian said, "Yeah, but who wants a part of an atom?" The truth is, of course, that it has furnished us with an inexhaustible source of power, the real potentialities of which can't be even vaguely guessed, and it proved

again, of course, that scientific satisfaction with the status quo is what Darius Keaton would call "ridickalus."

Absolutism

There is no such thing as absolute one hundred per centum anything. The Reader's Digest carried a short article an issue or two ago in which it was claimed that pure clover honey was really entirely and exclusively derived from clover blossoms. This we seriously doubt although we have nothing to support such an attitude excepting an ingrained disbelief in complete purity, complete impermeability, complete vacuum, or even complete understanding. How does the Reader's Digest know that a couple of bees didn't get sick and tired of communal regimentation and duck over to a dandelion patch for a short binge? Just after Mendeleef had discovered the periodic classification of the elements, and the atomic theory had been fairly well established, a noted scientist in a public address stated his conviction that physics had done all it could possibly do in resolving the mysteries of the universe and physicists had no option, therefore, but to go away back and sit down or content themselves with "repeating the experiments of the past."

Development of X-rays

He had hardly delivered his pronunciamento when Crookes found that by passing an electric current through a vacuum tube, a peculiar ray was emitted from the negative electrode. Later Roentgen discovered that this ray was able to pass through solid substances, could be deflected by a magnet, and had other unusual properties. Thus was born the X-ray with which we are all thoroughly familiar, thanks to our dentists and doctors. This was followed by the successive discoveries of the radioactive elements, uranium, polonium, and radium, and in no time at all prior conceptions of atomic stability and structure were hopelessly wrecked. Physicists concentrated fiercely on X-rays and the radiations from the radioactive elements. It was soon learned that the electrons of which X-rays were composed were infinitely lighter than the lightest atom (hydrogen), actually about one eighteen-hundredth of the weight. Rutherford analyzed the emanations from radium and concluded that they were made up of three streams of particles which he named alpha, beta, and gamma rays.

Atomic particles

In due course it was recognized that all these rays were simply streams of atom fragments that had abandoned their atomic ties and were trying to get out into the world on their own. These findings exploded two of the fondly cherished tenets of the earlier geophysicists. The atom was obviously capable of subdivision, contrary to their belief, and the transmutation dream of the old alchemists which had given many of their successors a good laugh was beginning to look much less foolish. Slowly the whole theory of atomic anatomy had to be revamped to conform to the new findings. From outer space came charging at tremendous velocities the cosmic rays which were mentioned earlier. They are also atomic constituents, mostly from the sun, and their speed is accelerated in great

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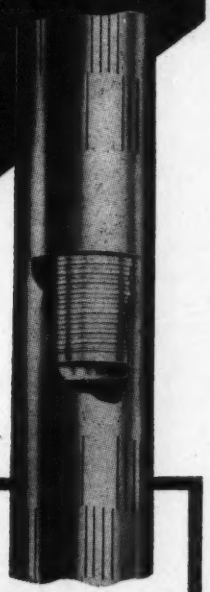

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measure by electro-magnetic forces. They are so small and so powerful that they can penetrate the outer shell of shells of an atom and shatter its little heart (officially called "the nucleus") to pieces.

Wilson Cloud Chamber

I recall during my brief visit with Dr. Anderson on Pike's Peak that he used an apparatus, known as the Wilson Cloud Chamber, in which the path of the cosmic particles could be seen and could actually be photographed for more leisure study. This device also showed collisions of these cosmic particles with atomic nuclei, even the consequent ejection of fragments of the latter. It is still an important instrument for the study of nuclear phenomena. The current conception of the atom is one in which the nucleus or core, consisting of neutrons and protons, is surrounded by one or more spherical areas of orbitting electrons, the number of protons, carrying a positive electric charge, being balanced by the negatively charged electrons in the outer shells. All of this has not only dissipated the old ideas of atomic structure but it has given science a new tool in controlled streams of atomic particles which can be utilized in a multitude of ways for the betterment of world conditions and the benefit of mankind. It is unfortunate that for the moment the emphatic outcome of nuclear study is a bomb that can blow the population of the world to perdition, leaving perhaps a few cowering souls in fallout shelters to begin a new race of permutted supermorons.

It is devoutly to be hoped that the dictators of international chaos will soon begin thinking with their brains instead of their glands, for there is promise of great and lasting good in the rational application of atomic power.

Inside the atom

In a previous chapter, the constitutional make up of atoms and molecules was discussed at some length but it is perhaps advisable to touch briefly on the subject once more. And again let us take a rap at the doctrine of absolutism. So far as I have been able to determine up to the moment there are no such things as solidity or immobility in the ordinary sense of the words. Despite the weight and relative density of a section of iron pipe, for example, if we were so gifted that we could see the individual atoms (assuming for the sake of argument that we are dealing with pure iron) of which it is composed, we would find that they consist of infinitesimal microcosmos with rotating, gyrating nuclei, around which their satellites are shuttling in a frenzied caper. And the strangest part of the whole thing is that the spaces between the component particles are infinitely greater comparatively than the particles themselves so that it is actually possible for a cosmic ray or other atomic component to pass right through the atom and never touch a thing.

Applications

This is exactly what happens when a pipeline construction engineer tests his welds with a bead of radio-active cobalt. The gamma particles that are given off in streams by the cobalt are so small that they go right through the molecules that make up the steel and impinge on a sensitized paper or film held on the inside of the pipe. This gives the operator an image that is indicative of the internal condition of the welds. It takes an expert, of course, to interpret the photograph that results but in this as in most types of deductive enterprise, practice makes something at least approaching perfection. The point, however, that I seek to make here is that the radiation which is a product of disintegrating atoms of cobalt can penetrate what we assume to be a solid substance, and to a considerable depth too. The story of the X-rays that penetrate the human anatomy and reveal all our innermost secrets is an exact parallel. Sooner or later when you get into this sort of a discussion someone will pipe up and say, "But this is silly, I can see plainly enough that my lead paperweight is not moving!" answer is: He can't see that it is moving because he doesn't have sufficiently perceptive eyes. The fact is that in solid substances the molecules or atoms are dashing about bumping into each other endlessly but the bumps on that side neutra-

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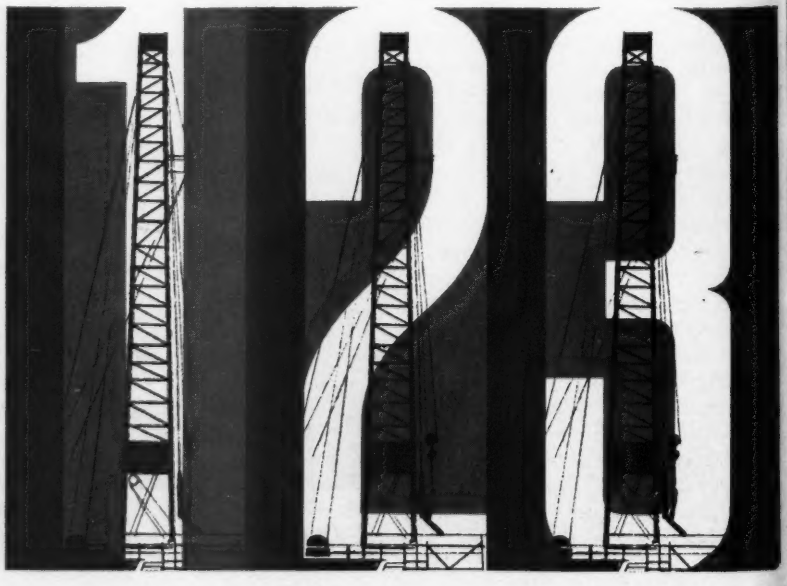


lize those on this side so the piece remains of a size and remains in the same place. This is what we call solidity and immobility but atomically and molecularly there are no such things.

The theory of solidity

Let us go back and take a look at something solid . . . — say a hunk of steel. Suppose now we were to heat the metal to its melting point, we would then find that the spaces between components of the molecules or atoms would become greater. The affinity that normally holds it together in what we call a solid mass would be weakened and the movements of the components themselves would become wider and faster. Their impacts would be powerful enough, indeed, to make the metal spurt and sputter at the surface for all the world like boiling porridge, and some of the atoms would even break away from their companions. Then suppose we continued still further with the heating process and eventually managed to turn the metal into vapor. This is when the atoms and molecules would really go on a rampage. They would be so far apart by this time that they would lose a great deal more of their attraction for each other and they would all tend to fly into space. It is rather easy to comprehend that just as the mass itself is enlarged or expanded by heat so is the atom or molecule and so also is increased the distance between the nuclei and their satellites.

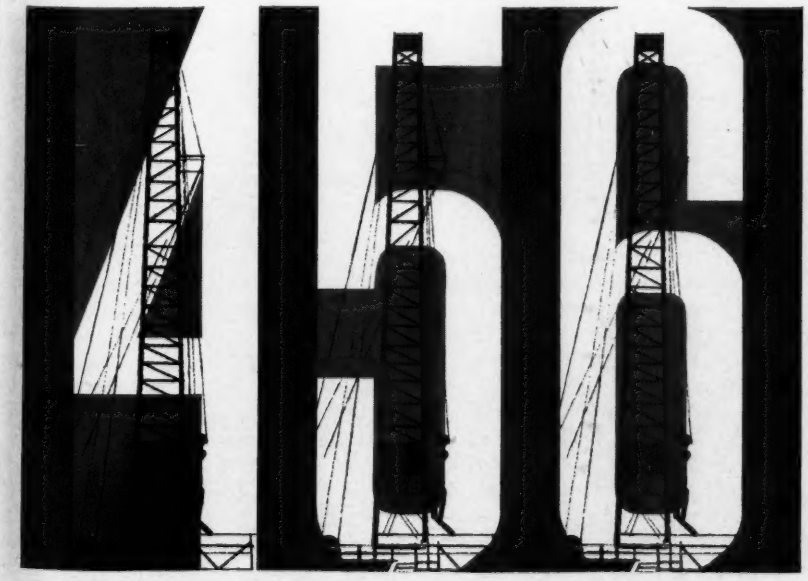
Methods of reforming

It has been noted that the thing which keeps the atoms dashing about every which way is an endless succession of collisions. They whack into each other with all the abandon of motorists on a freeway, and so do the atom components. If they strike with sufficient velocity and power they can and do disintegrate the atoms and even break down the nuclei.

Here then is one of the new tools of the petroleum industry and what it may finally accomplish in the way of revamping existing products and developing new ones is beyond imagining. We are already well aware of the far reaching effects of cracking — catalytic and thermal, isomerization, polymerization and alkylation in the transforming of certain hydrocarbons into more desirable types. The petroleum hydrocarbons, especially the heavy or high molecular weight ones, are exceedingly complex. If we can attack their internal structure in a series of varitype nuclear bombardments, goodness knows what might result. We now have a gadget called a cyclotron which produces the sub-atomic rays, then whips them up to some prodigious velocity and fires them at or into any medium we are in the humor to experiment with. I imagine that the mass spectrometer with its ionization chamber, and magnetic field deflecting the separate components in the order of their mass is at least a relative of the cyclotron. In any case it can analyze mixtures of 20 or more components in a few minutes. The same operation would have taken a week when I was in laboratory work. As a matter of fact now by far the greater proportion of time consumed in such a job is that devoted to the mathematics, and interpretation of the spectra (pictures) that are produced.

Comparisons

There are several methods of obtaining so-called artificial radio active materials, the cyclotron, already mentioned being one of the favored instruments, and the Van De Graaff apparatus, another. Then, of course, there are the naturally occurring radio active elements from which we get substances as uranium and thorium. The emissions from the latter are much less intense than from the artificially acquired ones, but all of them can irradiate other elements, and it should be remembered that the slow dissipation of atomic particles from one element changes its substance and reduces it to the next lowest member in the atomic scale. This could conceivably go on and on until we are left with nothing but a handful of energy. Incidentally, the rate at which the radio activity dissipates is a constant, determinable factor and hence can be used to measure the age of the rocks in which the phenomenon originates. It might be noted, too, as an indication of the tremendous power locked up in the atom, that a chemical reaction is accompanied by heat but



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the heat evolved in a corresponding nuclear reaction is approximately a million times greater.

Present & prospective use

The usual methods of detecting radiation are by electroscope, Geiger Counter, scintillator, cloud chamber, or photographic plate, and for a time there were some pretty unscientific scientists barging about the country with counters in the hope of locating enough uranium to pay up their back taxes. You have probably heard of the farmer who was getting sick and tired of these city guys running all over his property with their "goober counters", looking for "geraniums." It would be impossible to guess at all the prospective uses of atomic bombardment in the petroleum industry but it certainly opens a vast new world of exploration to the eager researchers. There is no doubt that it will be utilized to alter and improve the inherent character and properties of many hydrocarbon substances. It is already employed with considerable success to destroy malignant tissues in the human body and there seems every likelihood that it will be similarly effective in neutralizing undesirable matter in petroleum products. Certainly, generating equipment and radio active materials are indispensable accessories of the well organized modern laboratory. The latter are used as tracers for a multitude of purposes, to detect leaks in supposedly airtight containers, to measure fluid flow in pipes, ditches, and even rivers, to determine engine wear, and to gauge the speed of ractions, diffusions, and dispersions. They are also important in modern methods of chemical analysis as well as the physical testing of structural materials, such as the inspection of pipeline welds to which reference has already been made.

The challenge

There can be no question that radio activity will play an even more important role in the future of the petroleum industry than it is doing now. It seems obvious that the world of petro-chemicals will be affected greatly by the use of this comparatively new tool with all its strange capacities. The formation of isotopes and other species of permutation, contrived by sub-atomic bombardment, and the many unusual tasks that radio activity is already performing in the diverse operations of the industry, justify the modest assumption that the scope of application must be extremely wide. The entire phenomenon in all its aspects is far from being fully understood yet and because of its very nature, forward steps have to be taken with some degree of caution. The young PhD's are distinctly conscious of the fact that they are handling a dangerous commodity but they are simultaneously aware that they are standing on the threshhold of high adventure. The score to date is exciting enough, goodness knows, but I await with twitching antennae the word that subatomically they have really gone into orbit.

Harry Morrison and Dr. Nicksic of Western Oil & Gas Association Speak on Smog

Motor fuel additives now in use in Los Angeles do not constitute a health hazard and altering the fuel would have little effect on eye irritating smog, two oil industry spokesmen told an Assembly hearing on fuel composition and its relation to smog.

Dr. Stephen Nicksic, California Research Corp., and Harry Morrison, Western Oil and Gas Association, appeared before the subcommittee on Air Pollution and Radiation Protection of the California Assembly Interim Committee on public health at the State Building in Los Angeles October 10.

Nicksic, speaking for WOGA, said a joint study of fuel composition by the Los Angeles Air Pollution Control District, U. S. Public Health Service, U. S. Bureau of Mines and WOGA showed that changing Los Angeles gasoline composition would have no noticeable effect on eye irritation.

The joint study, just completed recently, was authorized by the Los Angeles County Board of Supervisors in July of 1959, when it passed APCD Rule 63, which set certain limits of the olefin content of gasoline. Motor fuel, Nicksic explained, contains hundreds of organic compounds which are called hydrocarbons, with olefins being some of the most reactive.

Nicksic noted the joint study had concluded that additional olefin controls "would not be readily perceived by the public," and control of other composition factors could not be justified.

Morrison, assistant general manager of WOGA, testified that proposed reductions in the sulfur content of gasoline and diesel fuels would be "insignificant in the air pollution control picture but costly to the motorists."

He cited a statement by Dr. John R. Goldsmith, State Department of Public Health, to the Motor Vehicle Pollution Control Board on August 11, 1961, which said that a recent study completed for the Department had shown that there is apparently no relationship between sulfur dioxide and eye-irritating smog.

Non-metallic additives used by the oil companies to produce the quality gasoline needed for modern automobiles are constantly controlled, Morrison said, and are far below the levels which produce any toxic effect.

Nicksic pointed out that "we cannot solve the smog problem by wishfully thinking that smog can be eliminated if only we have the right kind of motor fuel," and that "no responsible person who has used scientific methods and who has made definitive laboratory studies of his own has ever claimed that you can get rid of smog by controlling the composition of motor fuels."

The joint study took into consideration the imminence of exhaust controls which appear to be the best way to eliminate hydrocarbon emissions from vehicles and are already the subject of California legislation, he said.

Pacific Section SEPM Meet in Bakersfield Nov. 10

The annual meeting of the Pacific Section of the Society of Economic Paleontologists and Mineralogists will be held in Bakersfield Friday, November 10, at 7:30 p.m., at the Hacienda. The speaker will be Joseph Curray of Scripps Institute of Oceanography. The subject will be sedimentation along the mainland side of the Gulf of California.

A short business meeting and election of officers will be held. All interested geologists and engineers are invited.

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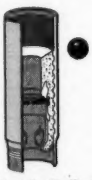

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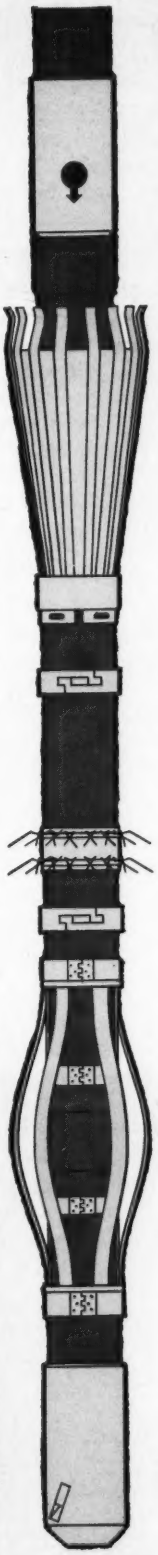

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Contract Drillers Meet

Members of the California Chapter of the American Association of Oilwell Drilling Contractors and guests held a dinner meeting recently in the Petroleum Club of Los Angeles to hear a dissertation on the financial aspects of their business by C. L. Vickers, vice president in charge of finance for Continental-Emsco.

Mr. Vickers delivered a highly informative and challenging address on the subject and was followed by Jack Skeehan, consultant, who sketched a plan for survival of the drilling contract industry, pointing out specifically those pricing tactics that are making such a plan essential, and at the same time indicating the modifications of procedure that are necessary to restore the requisite degree of economic balance.

The meeting was well attended. Over 50 contractors and equipment executives enjoyed the presentations and found the occasion an amply rewarding one. A number of the guests were from various parts of Texas, including in addition to Mr. Vickers, who headquarters in Dallas, John Lyons of Magcobar from Houston, Cliff W. Trice of Trice Production Company, Longview, and E. A. Kunnemann, Smith Tool Company representative at Dallas. Speakers and guests were introduced by Norman Haney, secretary of the local chapter.

U. S. National Committee Formed for Sixth World Petroleum Congress

A United States National Committee has been formed to plan the American oil industry's participation in the Sixth World Petroleum Congress, to be held in Frankfurt, Germany, in June 1963.

It was announced this month that Eger V. Murphree, president of Esso Research and Engineering Company, would head the U. S. group. Vice chairmen are Dr. Jerry McAfee, vice president, Gulf Oil Corporation, and Howard B. Nichols, senior vice president, California Texas Oil Corporation. Among committee members is A. L. Lyman, president, California Research Corp.

A total of 250 technical papers will be presented. They will cover: Geophysics and geology; drilling and production; processing and refining of oil and gas; base stocks from petroleum and natural gas for the chemical industry; composition, analysis and testing; utilization of natural gas and petroleum products; engineering, including materials and transportation, and "operations research," statistics and training.

November 3 Set for First Meeting of P.P.P. Luncheon Club in Bakersfield

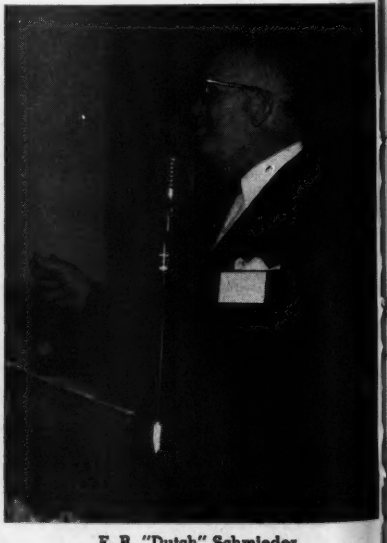
At a founding meeting held Friday, September 28, 1961, at Mossman's Chicken House, Bakersfield, assurance was given to the establishment of a Petroleum Production Pioneers' Luncheon Club in Bakersfield.

Hosting the luncheon-meeting was F. R. "Dutch" Schmieder, well known general manager of production operations for Shell Oil Company and a past president of Petroleum Production Pioneers. Schmieder, who together with Sam Kelly of M.K.B. Oil Tool Shop, accepted the responsibility of stimulating interest and preparing organizational groundwork, outlined the objectives of the Luncheon Club. Douglas Kingman, president of Petroleum Production Pioneers, brought greetings from his board of directors and told of the need for a Luncheon Club in Bakersfield, pledged the board's enthusiastic support and predicted a high degree of success in this endeavor. Floyd York, chairman of the Long Beach Luncheon Club (the first to be established) reviewed the history of that organization and gave a detailed account of their growth problems and activities. Secretary Olsen reviewed the 1961 PPP program to date and particularly urged cooperation in furthering the efforts of the Welfare Committee, headed by Tom Selser in Los Angeles.

Wm. A. "Al" Dewire, manager of San Joaquin Valley operations for the Conservation Committee of California Oil Producers, was chosen to be the first chairman of the Luncheon Club and Schmieder announced that the first official meeting will be held at Mossman's Chicken House on Friday noon, November 3, 1961, at which time an election will be held to fill the necessary offices.

Al Dewire advised that notices on this first official luncheon meeting will shortly be sent out to all members of Petroleum Production Pioneers located in the southern San Joaquin Valley area and urged full attendance in order to assure an enthusiastic and successful start.

Wm. A. "Al" Dewire
First chairman of P.P.P. Luncheon Club in Bakersfield



F. R. "Dutch" Schmieder
Announces first official meeting Bakersfield P.P.P. Luncheon Club.

CNGA Concludes Thirty-Sixth Annual Meeting

President R. O. Boykin keynoted the annual meeting of the California Natural Gasoline Association held in Long Beach October 12th and 13th in his address before the General Session on the concluding day. "The purpose of this session is to bring those in attendance a better perspective of the 'Challenging Sixties' by hearing the viewpoints of Judge Pfaff on our human relations, Mr. Gifford K. Johnson on the viewpoint of the defense industries, and Mr. H. C. McClellan with a look at world trade." The petroleum industry is not the only group of people to whom the '60s are a challenging decade.

Judge Roger Alton Pfaff

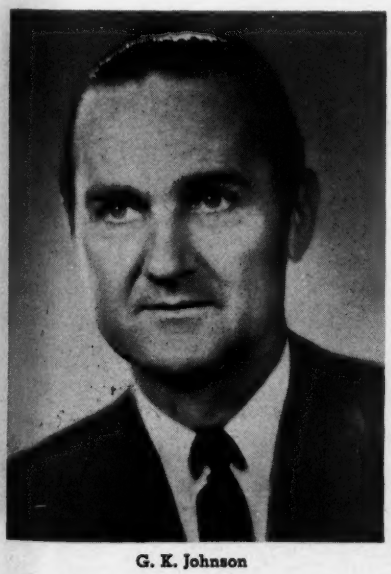
Forums and panels presented to the more than 800 men attending the newest information in the fields of refining, recent California developments, production, petrochemicals, and management. These discussions were directed by G. C. Brockman, Guy T. Martin & Co.; L. F.Strader, Richfield Oil Corporation; Frank Sesler, Sesler & Associates; James McDonald, Tidewater Oil Company; and W. J. Baral, Union Oil Co. of California.

Mr. Fred L. Hartley, Union Oil Co. of California, presided at the Management Luncheon, at which Messrs. P. J. Lovewell and R. B. Young, Stanford Research Institute, were the speakers. Their presentation of "Environmental Change and Corporate Strategy" gave to the more than 200 in attendance a condensed summary of the results of over six years of research at Stanford Research Institute into the causes of company success and failure.

The Award Luncheon was chairmaned by R. W. Todd, CNGA past president, and was highlighted by the presentation of awards to men who had made outstanding contributions to the association and the industry. Receiving the SAM Awards were: G. C. Elmore, Tidewater Oil Company; Linn Livingston, Continental Oil Co.; A. A. Quarnstrom, Richfield Oil Corporation; and L. E. Woodruff, Texaco Inc. The coveted CNGA Meritorious Service Award for young men was given to J. A. Gordon, Union Oil Co. of California.

Raymond W. Todd

Assisting General Chairman C. M. Sandland in arranging this meeting were D. R. Arnold, Signal Oil & Gas Co.; W. J. Baral, Union Oil Co. of California; Warren F. Kane, The Fluor Corp. Ltd.; L. S. Pierson, C. F. Braun; L. F. Strader, Richfield Oil Corporation; L. W. Barkley, E. I. du Pont Co.; R. O. Palo, Signal Oil & Gas Co.; and E. Vernon Frost, Frost Engineering Service Co.



G. K. Johnson

Fred L. Hartley

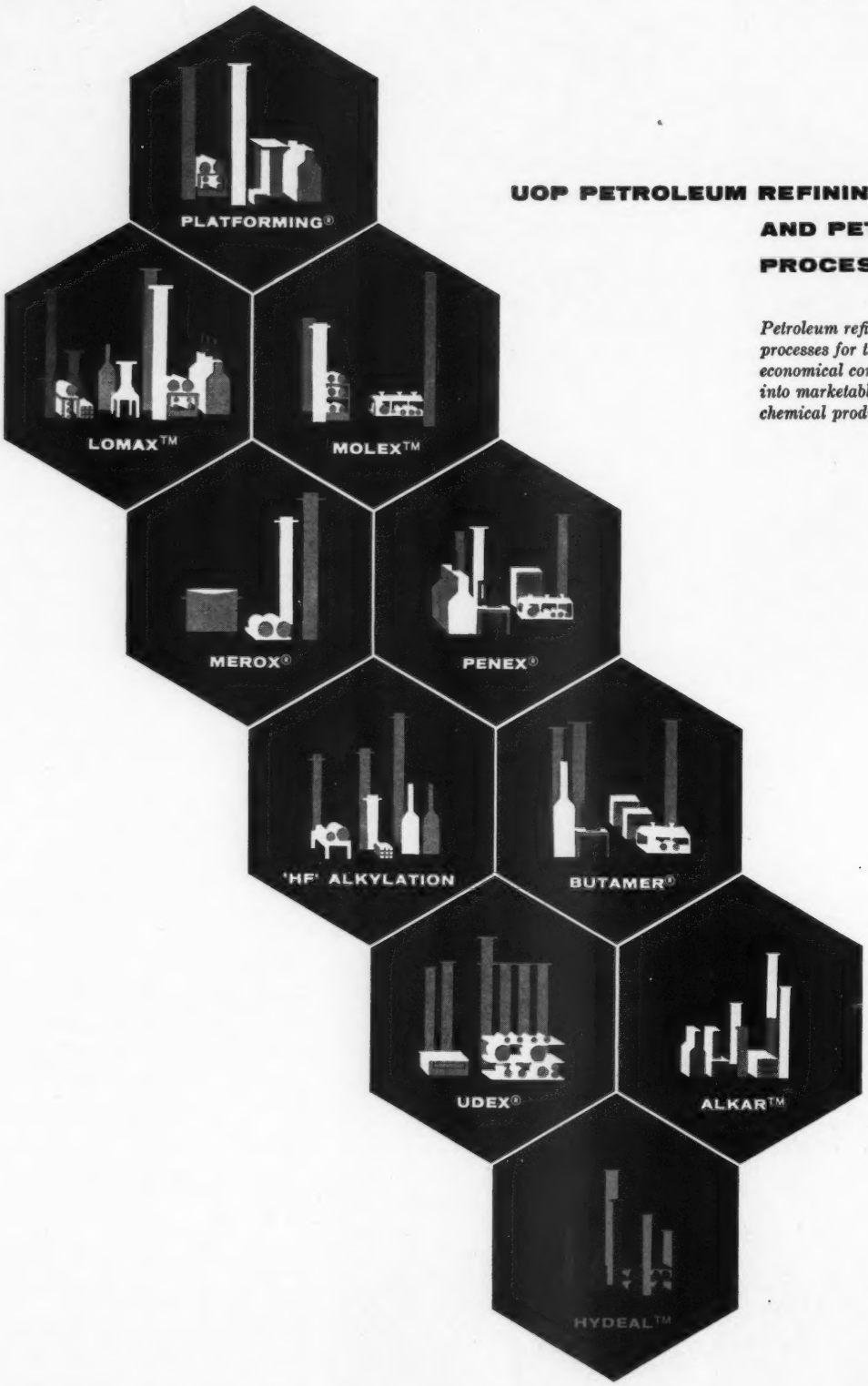
Frank N. Ikard Named Exec. V.P. of A.P.I.

Frank M. Porter, president of the American Petroleum Institute, announces that Frank N. Ikard of Wichita Falls, Texas, has been named to the newly created position of executive vice president of the Institute.

Mr. Ikard has represented with distinction the 13th Congressional District of Texas since 1951.

Born in Henrietta, Texas, he received his bachelor of arts and law degrees from the University of Texas. He served from 1937 to 1948 as a practicing attorney in Wichita Falls, with time out for service in World War II. As an infantryman he was wounded twice and was later held in a German prisoner of war camp.

He served as a judge in the 30th Judicial District Court of Texas from 1948 to 1951 before winning a Democratic primary fight for election to Congress. He has run unopposed in five elections since then.



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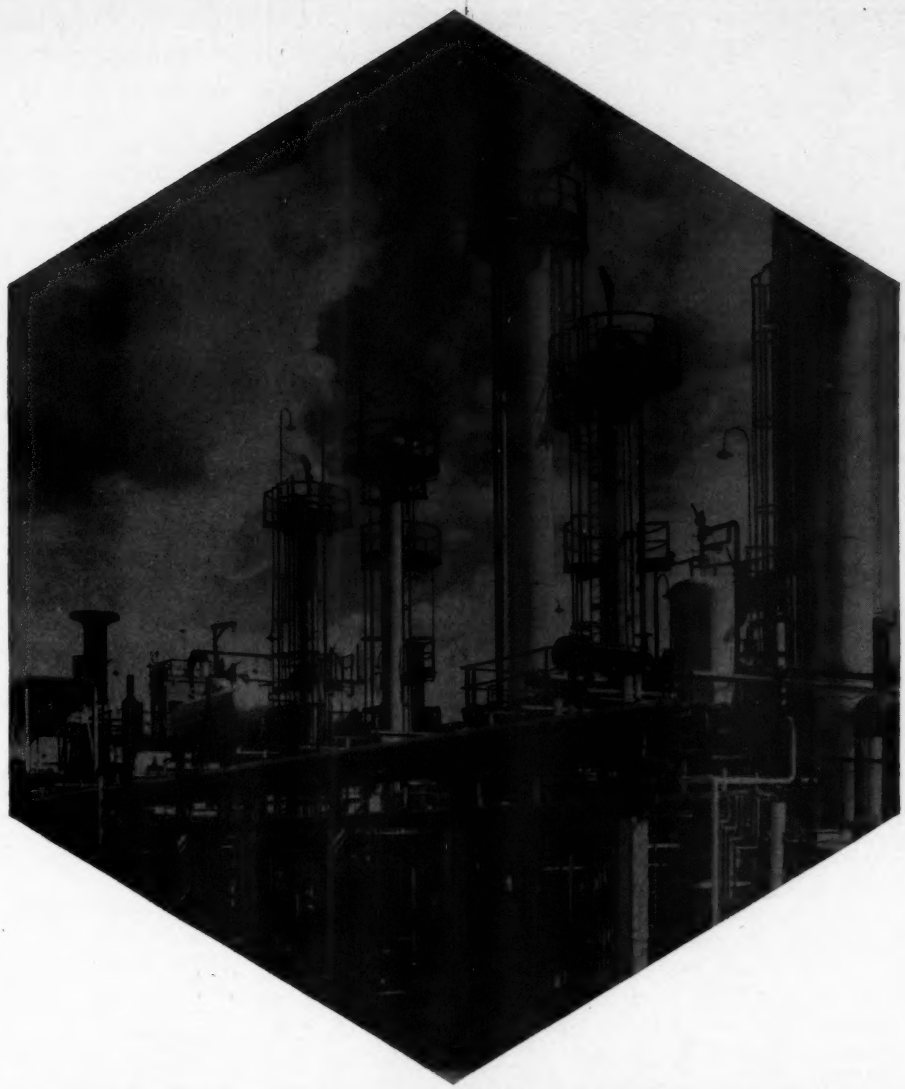

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Magcobar Mud Co., Inc., Issues New Brochure

"Now Packaged Air Compressors Made for Rocky Mountain Air Drilling" is the title of a new brochure issued by Magcobar Mud Company, Inc., of Denver, Colorado, which serves the Rocky Mountain Region of Magnet Cove Barium Corporation (Magcobar).

The four-page, two-color publication covers the design, operation and features of the three new packaged air compressors offered for rent in the Rocky Mountains by Magcobar Mud Company.

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M. KINZIE MILLER
(Signature of Publisher)

Sworn to and subscribed before me this 29th day of September, 1961.
(SEAL) LIBBIE A. GARBER
(My commission expires December 7, 1964.)

H. G. Vesper, Pres., S.O. of Calif. Western Operations, Optimistic on Alaskan Oil

Alaska's future oil prospects can be viewed with "qualified optimism," H. G. Vesper, president of Standard Oil Company of California, Western Operations, Inc., declared when in Alaska this month.

"We have seen enough favorable development, so far, to be optimistic," he said. "We are also aware that the financial risk involved, the geographic and other obstacles to overcome, are far from insignificant."

Vesper, whose company is the operator of the Swanson River field, Alaska's only productive oil field, made these other points in an address to the Alaska State Chamber of Commerce.

1. Standard will invest $10 million in the 20,000 barrel-a-day refinery it plans to build on the Kenai Peninsula. Target date for completion is mid-1963, possibly by the end of 1962.

Construction of the plant will enhance the value of Swanson River crude, adding to the State's royalties. It will also make possible some product price reductions in principal Alaskan markets, Vesper said.

2. The "no down payment" feature of the State's non-competitive lease regulation — requiring only a $20 fee for filing on a non-competitive lease — will cost Alaska money over the long run.

"We are aware that the State received nearly $270,000 in filing fees from the July sale," he declared, but "it is the actual discovery of oil — not merely the accumulation of filing fees — that will create the jobs and generate the royalties we have in mind when we talk about Alaska's promise of oil."

Vesper advocated advance rental payment as a prerequisite to filing on lands offered by the State for non-competitive leasing "to discourage speculators."

3. The producing industry "is not sufficiently robust to shoulder a tax load that lengthens the odds against ultimate payout of its investments."

The oil industry will cooperate with any tax program that will be conducive to further development of Alaska's oil, Vesper declared. But he cautioned that "your young industry is, from a financial standpoint, on delicate footing."

If the tax load becomes burdensome, he pointed out, "oil money which would otherwise flow into Alaska will seek other, more hospitable climes."

4. The Federal Government's policy of restricting individual company land holdings continues to slow development. Recent passage by Congress of an amendment raising the limit to 600,000 acres is "a step in the right direction," Vesper said, adding, "We can only hope that in the future the Federal Government will see fit to liberalize its policy even further."

5. Federal land withdrawals and restrictions prohibiting exploration in wildlife areas likewise are hampering oil development. "It would be tragic," Vesper declared, "if any potential oil lands in Alaska were left untested, when we know this can be done without harm to the wildlife."

Further to this point, passage of the Wilderness Bill, recently approved by the Senate, will not benefit Americans "and would be particularly injurious to Alaskans," Vesper said. "We fail to see how America can better itself by denying access to potentially important deposits of oil and other minerals, when they can be produced without harm to the land itself."

Concluding his survey of the current Alaska oil situation, Vesper told the meeting, "I can't guarantee that (our) efforts are certain to meet with success. But . . . with the encouragement of government, with the support of Alaska's people, with the cooperation of nature and some plain, old-fashioned good luck — we're going to be busy here for a good many years to come . . . hunting for your oil and — I hope — finding it."

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P.C.A. of Alaska Elects New Officers

On October 11, 1961, the Petroleum Club of Anchorage elected the following new officers and directors:

President, George Y. Wheatley; Vice President, Carl F. Brady; Secretary, Ernest R. Bush; Treasurer, Locke Jacobs, Jr.

Eastman Oil Well Survey Co. Promotes Four

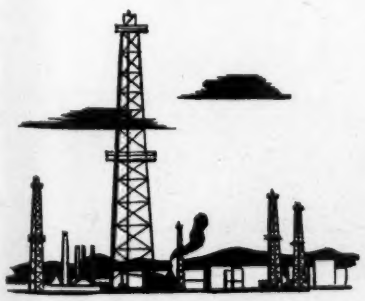
Philip D. Arterburn, president, Eastman Oil Well Survey Co., Denver, announces the promotion of four key men in its West Coast division.

B. W. (Bill) Wheeler, Long Beach, formerly a part owner of McGaffey-Taylor, an Eastman subsidiary, has been named general manager of Eastco's Production Division. Wheeler, a 31-year veteran in oil field production, has been vice president in charge of McGaffey-Taylor's operation in the Pacific Coast area.

John A. (Jack) Hamman, Long Beach, has been appointed vice president of McGaffey-Taylor and assistant to the general manager of Eastco's Production Division. Hamman, an Eastman employee for eight years, has been manager of the company's Pacific Coast directional drilling division.

Robert A. (Bob) Phipps, Huntington Beach, well known directional drilling specialist, has been promoted to the position of manager, Pacific Coast Directional Drilling. Phipps has been with Eastman for 20 years in field operations, superintendent, and as assistant to the Pacific Coast directional drilling manager.

Richard M. (Dick) Spencer, Long Beach, an Eastman employee for 11 years, has been promoted from directional drilling supervisor to field superintendent of directional drilling for the Pacific Coast area.



Miss Blanche W. Collins, Long Beach librarian (3rd from left), looks at some of the over 300 historical oil industry documents presented to the special Petroleum Production Pioneers section of the Long Beach library by Western Oil and Gas Association. The presentation was made in the name of Paul Andrews, Signal Oil & Gas Co. (right) by Leo M. Metzler, WOGA assistant secretary (3rd from right). Others taking part in the ceremony (from left) are William L. Emerson, library science-industry department head; D. G. Kingman, Mobil Oil Co., president of Petroleum Production Pioneers; and Sam Grinsfelder, Union Oil Co. (retired), honorary president of the Pioneers.

Historical Oil Documents Presented to Library

The Long Beach (California) Public Library was presented over three hundred historical oil industry documents in the name of pioneer oilman Paul Andrews on October 17 by the Western Oil and Gas Association.

The historical material, some dating back to 1893, will become a part of the special oil industry section of the library sponsored by the Petroleum Production Pioneers.

The Pioneers initiated action for the special section when they discovered there was no program for the accumulation and preservation of oil industry data of a historical nature. Long Beach was asked to provide for the facilities because of its outstanding library system and the importance of the area to oil industry development.

Accepting the gift from Leo Metzler, WOGA assistant secretary, were Miss Blanche W. Collins, Long Beach librarian, and William L. Emerson, head of the library's science-industry department.

Andrews, Signal Oil and Gas Co., is a long-time member of the Pioneers and historian for many years. He has been the motivating force behind the move to establish the library.

Also taking part in the ceremony at the Association's office were D. G. Kingman, Mobil Oil Co., president of the Petroleum Production Pioneers, and Sam Grinsfelder, Union Oil Co. (retired), honorary president of the group.

Kingman paid tribute to Andrews for initiating the oil library idea in 1959 along with E. "Pick" McIver, Shell Oil Co. (retired). He said the library will be a fitting tribute to the many pioneers who have worked to create the petroleum industry in California.

Miss Collins expressed her appreciation by stating that the collection of materials, when processed and properly housed, will be "a rich and unique resource for the study of the history of the oil industry in California."

The WOGA donation, Metzler said, contained almost 150 United States Geological Survey bulletins dating back to 1895, many of which are out of print and no longer available. Over 120 books also were included, the oldest of which was published in 1893. The materials altogether filled 15 boxes.

Personalities IN THE NEWS

Jim Edwards

Don Prehoda

G. D. Wiley

McCullough Tool Co. Promotes Three

I. J. McCullough, president, recently announced three major changes in McCullough Tool Company's organization.

Jim Edwards has been appointed coordinator — Logging and Radiological Safety; **Don Prehoda** has been appointed Mountain Division sales and service manager; and **G. D. Wiley** has been promoted to Mountain Division sales supervisor.

Edwards joined McCullough Tool Company in April, 1953. He has since served in several capacities, including logging engineer at the Los Angeles headquarters; geologist and sales engineer, Denver Sales Office; and sales manager of the Mountain Division. A University of Southern California graduate in geology, Edwards is an active member of the A.A.P.G., AIME and Society of Professional Well Log Analysts.

Don Prehoda has been with McCullough Tool Company for twelve years. Prior to his recent appointment he served in several capacities at the Los Angeles District, advancing from serviceman trainee through service unit operator, sales representative, assistant district service manager and district manager.

Since joining McCullough in 1954, G. D. Wiley has served in the capacity of sales representative and more recently as assistant Mountain Division sales manager. He was previously employed by Baroid Sales Division in their well logging department in the Mid-Continent and Rocky Mountain areas for six years.

Meyer Luskin Heads Southern California Petroleum

Meyer Luskin, a prominent Southern California business executive, has been appointed president and chairman of the board of Southern California Petroleum Corporation. Mr. Luskin has been a member of the board of directors for the past two years. Mr. Luskin, a youthful veteran in Southern California business, provides a background of 10 years as an investment broker and investment counselor and is presently a director of Capital Dynamics and Holiday Stores, Inc.

Upon his appointment, Mr. Luskin said Southern California Petroleum has initiated a program designed to broaden the scope of operations and increase the company's growth pattern.

Robert E. Williams Made Vice President of Sales at The Youngstown Sheet and Tube Co.

Robert E. Williams became vice president, sales, of The Youngstown Sheet and Tube Company on October 1, 1961, succeeding **Myron H. Watkins,** who resigned on that date after 36 years with the company.

Watkins had been vice president, sales, since 1954 and a director of the company since April, 1960.

Williams previously was vice president, sales, of National Tube Division of United States Steel Corporation.

He is a native of San Francisco, attended schools in Oakland and was graduated from the University of California at Berkeley in 1935 with a bachelor of science degree in civil and structural engineering.

He began his career in the sales department of United States Steel's Columbia-Geneva Steel Division following his graduation from college.

In 1945 Williams was named assistant to vice president, and the same year became manager of production planning. He was made director of production planning in 1948.

Robert E. Williams

Magcobar Mud Company Promotes Three

The following promotions, effective immediately, at Magcobar Mud Company, Inc., drilling fluids firm of Denver, Colo., were announced recently by **Ernest Howell,** president and general manager of Magcobar Mud:

W. B. (Bill) Corser from district manager at Farmington, New Mexico, to sales manager.

Keith Peverley from district engineer in the Four Corners Area to district manager at Farmington to succeed Mr. Corser.

Bill Dahlem from district manager at Casper, Wyoming, to technical services manager.

During his five years with Magcobar Mud, Mr. Corser has served in sales and engineering positions at Glendive, Montana, and Denver, Colorado. He will assume his new position immediately but will wait until after the first of the year to transfer to the company's Denver headquarters.

Mr. Peverley, a graduate of the University of Wyoming, has been active in the drilling field in the Four Corners area since the beginning of the drilling boom there.

In his new assignment, Mr. Dahlem will remain in Casper, where Magcobar Mud recently opened the only complete drilling mud laboratory in the Rocky Mountains.

Phillip J. Liston Named Sales Manager of Fibercast Co.

Phillip J. Liston has been named sales manager of the Fibercast Company, division of The Youngstown Sheet and Tube Company. The appointment, effective August 25, 1961, was announced recently by **Craig Smyser,** vice president of Continental-Emsco and general manager of Fibercast.

Fibercast is the world's leading producer of glass-reinforced thermosetting plastics, and it is under the direction of Continental-Emsco, also a Youngstown division.

Liston has been assistant general sales manager in charge of Special Projects. He has been with Continental-Emsco and Fibercast for the past six years, joining Continental-Emsco in export sales. He had been successively, special projects representative, district sales manager of Fibercast and asst. sales manager.

First, second and third place winners in the annual Hard Hat contest conducted by the Desk and Derrick Club of Long Beach. Left to right: Donna Prior (E. B. Hall & Co., Terminal Island), Dorothy Brogan (Union Oil Co., Wilmington), Susan Millette (drilltrol, Long Beach). Most hats contained moving parts and were clever interpretations of various phases of oil production.

Promotions Announced by Continental-Emsco Company

Promotions find Continental-Emsco Company men taking on new jobs.

Jack Gum, former field salesman at Long Beach, California, is now D+B specialist there; **Melvin Stewart** and **Richard Lovell,** former Taft, California, field salesmen, are promoted to D+B specialists.

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Technology and the Future of Oil and Gas

By Bruce C. Netschert, Director,
National Economic Research Associates, Inc., Washington, D.C.

Presented at the 21st Annual Meeting of
The American Association of Oilwell Drilling Contractors
Rice Hotel, Houston, Texas, October 4-5-6, 1961

I'm an economist, of sorts. In a sense I am going to talk economics and leave the technology up to you. My conscience is clear, however, in discussing your business, because I believe it is just possible that you may find my ideas interesting — coming as I do from the outside, and looking in.

What I propose to talk about is the future of the oil and gas industry as I see it and that future as it affects you own particular activity — drilling.

The fundamental determinant of the future of the oil and gas industry is, of course, the demand for the industry's products. What are the likely future demand levels, and what do they mean in terms of drilling?

In talking about future demand, production and drilling levels, it is all too easy to get lost in a statistical swamp. I intend, therefore, to keep statistics to a minimum.

I don't have to point out to you that imports have an effect on domestic crude production.
Imports have been growing steadily all through the postwar period, but it was not until the domestic demand weakened that the issue of imports as a threat to the domestic industry came to a head. Imports supplied 42% of the increase in the U.S. demand over the period I've been discussing. Assuming that the level of imports holds at about 19% of domestic demand (which is where they've been for the past three years, and which is the only safe working assumption), then they will take a significantly **smaller** part of the future increases in demand than they have in the past.

Next, consider changes in stocks. In 1956 and 57, stocks were being built up at a rate of some 179,000 bpd. In 1960, on the other hand, they were being cut back by 122,000 bpd. This is equivalent to a drop in the demand for domestic crude of 300,000 bpd, and is almost as important as the past increase in imports.

But, like the past effect of imports, this is not likely to carry over into the future.

Then there is the matter of exports. Until 1957, the U. S. was exporting an average of about 400,000 bpd. Since then, exports have been more than cut in half. Future losses in foreign markets for U. S. products should have a smaller impact than in the past.

In general, then, there are several aspects of the present gloomy domestic crude situation that are temporary. Some things should improve in the future. The improvement may even be sufficient to get crude oil production on the increase again from the virtually stationary level it has hovered around over the past five years (except on the Pacific Coast).

So much for oil demand prospects. Are the prospects for gas demand any better? The answer is, yes, but not as rosy as they have been to date. The growth in gas demand is slowing down for several reasons.

First, the recent pace of growth in gas production reflects the final stages in the extension of major pipelines to all section of the country. (As you know, there are only three states, Maine, Vermont and Hawaii, that are not supplied with gas.)

Second, a good part of the recent growth in gas production has also reflected the capture by gas of markets previously held by coal and oil. Here, too, the extension is largely complete, the number of houses remaining that can be converted from coal and oil heating to gas heating is relatively small, and the same is true in industrial applications.

Third, the ability of gas to capture markets from the competing fuels in the past has been due in large part to the price advantage of natural gas in Btu terms. With the steady rise in gas prices, however, price competition between the fuels is now much more even and the pace of gas expansion into new markets at the expense of the other fuels must inevitably be slower. Thus, the future rate of growth in gas demand, and therefore production, will be much closer to the rate of growth of the economy as a whole. Recent estimates of that growth range from 3.5% to 5% a year and my feeling is that it is likely to be much closer to the lower than to the upper level.

Now, what does all this mean for the level of drilling activities?

There will be factors operating in both directions in drilling for oil. The present trend toward tighter conservation regulations may be expected to continue. Well spacing will be wider and there will be greater pressure for voluntary and compulsory pooling and unitization. All of this will tend to reduce the number of wells drilled for additions to reserves and for the creation of producing capacity. On the other hand, I foresee a dramatic increase in secondary recovery operations. Water flooding has recently been increasing at a very rapid rate, and the new techniques of miscible flooding and fire flooding are being perfected. Two hundred billion barrels of oil currently exist in known reservoirs but are not counted in proved reserves because they are not economically recoverable at present. This will require injection wells, perhaps even more wells and footage than would be required to make an equivalent quantity of primary reserves producible. On the assumption that you gentlemen want to drill, and it makes little difference what you are drilling for or why you are drilling, this should qualify as good news.

To the extent that drilling is directed toward gas, the spacing factor is also at work on the negative side, since fewer wells are required to develop a gas field than an oil field. At the same time, however, all evidence points to the fact that drilling for gas is and will be deeper than drilling for oil. The relative incidence of gas increases with depth, therefore, although fewer wells may be drilled for a given quantity of reserve additions, the total footage should increase.

Drilling for both oil and gas will be effected negatively by a technological development that is experiencing an explosive growth — I refer to multiple completions. The number of wells multiply completed

totalled 6% of all completions in 1960. So far this year they are running about 16% and it looks as if the number of such completions in all of 1961 will be 2½ times larger than the total in 1960. Multiple completions mean, of course, that more reserves can be tapped with fewer wells. On the other hand, the picture is not all black; for, to the extent to that multiple completions reduce costs — and the cost reductions in some instances can be very large indeed — they justify the drilling of wells that might not otherwise be undertaken. In general, it can be said that the deeper the well in a basin with multiple pays, the greater the possibility for multiple completions. The drilling of deep wells is thereby encouraged.

Still another negative element is one which has not received much attention. I refer to the relation between the number of rigs in use and the number of wells being drilled. Over the past decade, the ratio of the monthly average of rigs in use in wells drilled shows a remarkably steady decline. Between 1955 and 1960, for example, total new wells drilled dropped 16%, but the number of rigs in use fell by 27%. The number of rigs in use per new well completion has been dropping about 3% a year since 1949 (and faster before that.) If this trend were to continue for the next decade, a 50% rise in the number of new wells would only increase the number of rigs in use by at most 10%, or not even up to the 1958 level. A decline of 5 to 10% is more likely the result.

This is, of course, a reflection of the improved efficiency of the drilling business.

I seem to be a bearer of nothing but bad tidings, but I can end on a different note. Although there are many dark clouds on the drilling horizon, technology is the sun that shines through all of them.

Let me talk first about technology and the **uses** of the fuels. There is at present a great technological ferment going on in the whole field of energy conversion and use. We hear of such things as the fuel cell, gas air conditioning, thermoelectricity, electric heating an all electric house, MHD, the self contained utility system using the gas turbine — and there are many more.

What this means for drilling contractors is that unless they can make their contribution to holding down the cost of finding and producing oil and gas, and to their actual reduction, if possible, the final markets for the products of the oil and gas industry become increasingly in jeopardy.

Costs, of course, are a reflection of the technology of production, so I turn to this side of the technological coin.

What do I really mean about cost-savings and technology? Well, an example of what I do **not** mean is using a cheaper bit in place of a more expensive one as soon as it is apparent that the cheaper one will do the job. This is the kind of thing you will always do if you are paying attention to costs. I am talking about cost-savings achieved through the most intensive application possible of the technology available to you, and of the prompt adoption of any advance, as soon as it becomes available.

What new innovations will come in the future no one, of course, can tell. However, the Mohole project gives some indication of what may be expected. The achievements to date on that project have already extended the capabilities of drilling technology beyond what many thought would be forever unattainable Successfully making hole at the end of a 12,000 foot dangling string is the equivalent of getting a raw oyster into a slot machine.

In any event, it is already clear that by the time Project Mohole is successfully completed, it will have made many revolutionary additions to the art of drilling. The drilling industry as a whole cannot help but benefit.

So I say to you: seize on technology and squeeze it as hard as you can. I referred earlier to the lesson that lay in the decline in rig numbers as the completions per rig in use increased. That lesson is: improve your efficiency — or else. You know that old hymn that goes, "When the Roll is Called Up Yonder, I'll Be There." I suggest the appropriate motto for the drilling contractor is: "When the Hole is Drilled Down Yonder, I'll Be There."

Walter Prill Guest Speaker At Desk & Derrick Club of L.A.

"Three to Get Ready" was the intriguing title of the talk given by the guest speaker at the regular dinner meeting of the Desk and Derrick Club of Los Angeles at the Biltmore Hotel Music Room on October 17. Mr. Walter C. Prill, educational services manager of Southern Counties Gas Company of California, used this title to cover an examination of future requirements in energy brought about by the expanding population. The need for new fuel supplies, new means of transporting fuels to markets, and other demands of an expanding tomorrow are matched by the need for intensified creative thinking to solve the future's problems.

Mr. Prill is a native Californian and received a master's degree in Speech at the University of Southern California. In addition to having lived and studied in Europe at Paris and Lausanne, Switzerland, he is a former associate director of the famed Pasadena Playhouse and past president of the Laguna Playhouse, and has earned the Trojan diamond medal for outstanding work in play production.

Barton Instrument Corp. Releases Industrial Instrument Bulletin

Barton Instrument Corporation, Monterey Park, California, manufacturer of instruments for the measurement and control of flow, liquid level, temperature, differential and absolute pressures, has just released a new edition of its GI-4 industrial instrument bulletin. Included in this comprehensive, fully illustrated reference piece are product descriptions and specifications on the complete line of Barton meter bodies, indicators, recorders, switches, transmitters, controllers and integrators.

Also included are basic data on the application of industrial instruments, when a bellows type meter is superior to a mercury type, why certain meters can be overranged and others cannot, plus other information pertinent to the field of industrial instrumentation.

Copies may be obtained by contacting the manufacturer, Barton Instrument Corporation, 580 Monterey Pass Road, Monterey Park, California.

Typical oil exploration unit, manufactured by Oilfield Truck Equipment Company of Houston, Texas, for a major oil producer, has body clad in Type 302, 20-gage stainless steel sheets with 2B finish products by Jones & Laughlin Steel Corporation Stainless and Strip Division. Oilfield Truck Equipment custom builds stainless bodies for oilfield work, where corrosion resistance, sturdiness and low maintenance are important. The unit pictured houses seismographic recording instruments and developing equipment for exploration work.

Byron Jackson Pumps Enlarges Hydraulic Test Lab to 17,500 H.P.

In a major expansion of its hydraulic test laboratory facilities, Byron Jackson Pumps, Inc. has increased the test motor capacity to a total of 17,500 horsepower, according to John P. Adams, vice president and general manager of the company.

Used for determining hydraulic performance characteristics of new centrifugal pump designs manufactured by BJ, this facility was already one of the largest of its type in the world. With the new additions, the total floor area is 153 x 60 feet, with a 400,000 gallon underground reservoir measuring 102 x 30 feet, and up to 30 feet deep.

A 40 ton crane has also been added to accommodate the largest pumps, including specialized Byron Jackson designs for advanced nuclear power and industrial applications. Pump and motor assemblies over 60 feet in height can now be tested in the lab, and venturi meters from 60 to 70,000 gallons per minute are available.

Adams pointed out that special power facilities were required for the electric motors which can produce a total of 17,500 HP on a single test.

In addition to special facilities which have already been available for nuclear hot and cold loop testing, a new cooling tower allows control of water temperature during all hydraulic tests.

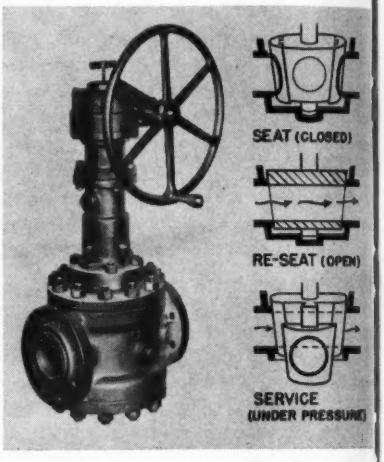
A bulletin describing these new facilities is available by calling or writing for Bulletin No. 1-1750 at Byron Jackson Pumps, Inc., P. O. Box 2017, Terminal Annex, Los Angeles 54, California — Telephone: LUdlow 7-6171.

Plug Valve Seal Replaceable While Line Under Pressure

Elimination of down time in product handling and process fields is now possible through the use of a new plug valve whose seals are replaceable while the line is under full pressure. Known as the General Seat and Re-Seat Twin Seal Plug Valve, this design has been field testing for more than two years. The success of these tests have encouraged the manufacturer to make this valve available in a wide range of pressure ratings and in all popular sizes.

The new valve provides double block and bleed service, and offers exclusive advantages which are the result of a patented plug-assembly. When the plug moves downward, two replaceable seating segments on the plug are wedged outward to effect the double block. When the plug moves up, these segments retract and disengage from the body seats before the plug is rotated to the open position. This perpendicular action of the seating segments eliminates galling or scoring of the seats, and permits the use of soft, resilient seals.

In the event seals need to be renewed, line pressure is confined to the conduit passage with the valve in the open position. The segments, which are retained on the plug by means of dovetailed slots, can be pulled out and replaced through a bottom access plate. The line need never be shut down due to valve maintenance.



This valve is available in 2" and larger sizes, all pressure ratings, and in venturi or round hole patterns. Write for complete details: General Valve Company, Inc., 2817 Cherry Avenue, Long Beach, California.

Technician at Esso Research Center, Linden, N.J., examines shape of an oil-burner flame following equipment modifications based on an Esso invention. Conventional high-pressure burners of the same type are used in more than 8½ million U. S. homes. The researchers found both in the laboratory and under actual operating conditions that a smaller, whiter flame will produce the same heat with substantially lower oil consumption. Tests in 30 homes for a full heating season (1960-61) resulted in average savings of more than 20 per cent on fuel bills—or $53.50 per home. According to Humble, the Esso Research invention promises savings of millions of dollars for oil-heat customers.

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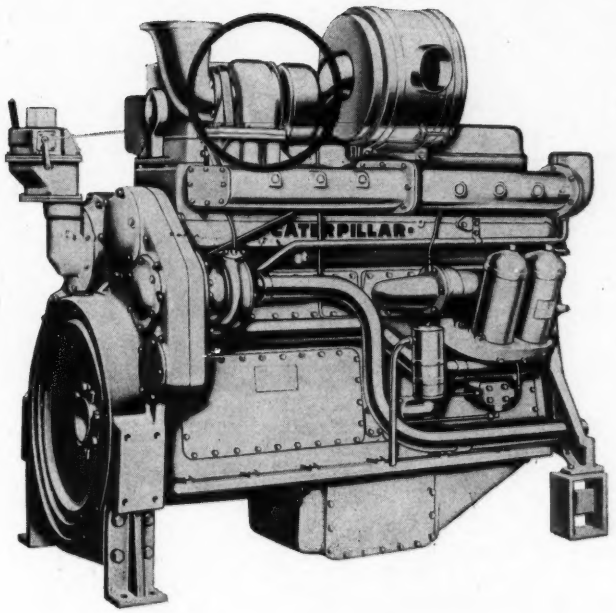

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Field Development

LOS ANGELES BASIN

Val Verde Wildcat

Bradley, Muhl and Johnson are preparing rig site for Well No. 1, a wildcat located on the northwest quarter of Section 10-4n-17w in Los Angeles County. The well will be drilled to about 6500 feet and is one mile north of Del Valle production.

Soledad Wildcat Abandoned

Coast Exploration Company drilled to a total depth of 1002 feet on Golden Triangle No. 2 and after logging plugged and abandoned the test. Location of the well was on the southwest quarter of Section 19-4n-15w in Los Angeles County.

Saugus Wildcat

Texaco Inc. is rigging rotary to deepen N. L. & F No. 1 located on the southeast quarter of Section 16-4n-16w in Los Angeles County. The well, originally called N. L. & F. No. 56-16, was drilled by the Tidewater Oil Company in 1955 and abandoned at a total depth of 9140 feet.

East Los Angeles Recompletion

Richfield Oil Corp. recompleted Edison-U.P. Unit No. 1 flowing 105 b/d oil with a cut of 7 per cent from the interval 8081-8110 feet. Flow was through a 12/64" bean and gas was gauged at 1359 mcf. Located on Section 16-2s-12w, the well was originally completed from the interval 8250-8290 feet. Total depth is 8407 feet.

Rosecrans Test

Union Oil Company of Calif. is preparing to drill Padelford No. 5, a 3900-foot test on Section 17-3s-13w, located north and east from the intersections of Rosecrans and Main Street.

Three Beverly Hills Tests

Signal Oil and Gas Company is preparing to drill two new wells in the field. Signal-Richfield-Olympic Community No. 3 is located near the intersections of Pico Boulevard and Peg Place on Section 25-1s-15w, and Signal-Richfield U-44 No. 3 is at the intersection of Pico Boulevard and Kerwood Avenue on Section 36-1s-15w.

Universal Consolidated Oil Co. is moving in rotary to drill Community No. 310-D near the intersection of Fox Hills Drive and Pico Blvd. on Section 25-1s-15w. The Sun Drilling Corp. has the contract to do the drilling.

SAN JOAQUIN VALLEY

Gosford Dual Completion

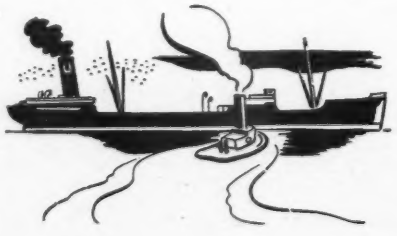
Universal Consolidated Oil Co. completed KCY-Coulter No. 16-25 flowing 288 b/d of 33.7 gravity oil with a cut of 0.5 per cent from the Upper Zone perforated at four intervals within 9807-9985 feet. Flow was through a ¼" bean with a flow pressure of 445 psi and 199 mcf of gas. From the Lower Zone perforations 10,112-10,194 feet flow was 228 b/d of 29.0 gravity oil cutting 2 per cent through a ¼" bean with 400 psi flow pressure and 150 mcf gas. Total depth is 10,304 feet with 7" casing cemented at 10,275 feet. Location of the completion is on the southwest quarter of Section 25-30s-26e. KCY 83-26 located on the northeast quarter of Section 26-30s-26e is drilling below 5000 feet.

Kern County Wildcat

Goodrich and Hudson of Bakersfield, Calif., has staked location for Goodrich-Hudson No. 1 on the southeast quarter of Section 8-10n-23w in the Pattiway area. The test is on the Cienega Anticline, five miles south of the Midway-Sunset Field.

Richfield Offset Test

Richfield Oil Corp. has staked location for KCL-L No. 81-34 on the northeast quarter of Section 34-11n-20w in Kern County. The well is a northeast offset to its KCL-L No. 72-34, an apparent discovery now production testing.



Monterey County Wildcat

Reserve Oil and Gas Co. drilled to a depth of 3365 feet on Trescony-Echenique No. 1 and abandoned the wildcat. The test was located on the southwest quarter of Section 30-21s-9e about seven miles southeast of the King City area production.

Tejon Outpost

Richfield Oil Corp. is preparing to drill Tejon A No. 181-34 on the southeast quarter of Section 34-11n-19w. The location falls ½ mile southeast of Tejon production.

Phillips Wildcat Testing

Phillips Petroleum Co. drilled to a total depth of 12,894 feet on S. P. No. 48-1 and abandoned the lower portion of the hole. The well was plugged back and redrilled from 6318-6737 feet and is recovering about 5 barrels of oil per hour on a swab test. The well is located on the southeast quarter of Section 35-12n-19w in Kern County, about six miles north of the Grapevine Field.

Kings County Wildcat

Socony Mobil Oil Company, Inc. is preparing to drill Balfour No. 32-24 on the southwest quarter of Section 34-24s-18e in Kings County. The location is in the Pyramid Hills area.

South Belridge Outpost

Belridge Oil Company is preparing to drill Well No. 25L-27 located on the southwest quarter of Section 27-28s-21e in Kern County. The well is about 1500 feet northeast of present production.

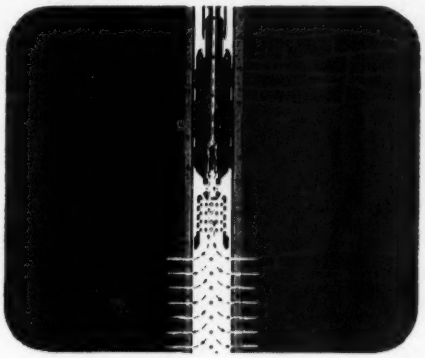
NORTHERN CALIFORNIA

Atlantic Completion

Atlantic Oil Company completed Sutter Gas Unit A No. 4 flowing 5200 mcf of gas with a flow pressure of 2000 psi from three perforated intervals between 5771-6347 feet. Located on the southwest quarter of Section 19-15n-2e in Sutter County.

"SPECIALIZED"

SQUEEZE CEMENTING with HALLIBURTON TOOLS



Squeeze Cementing and Bridge Plugging operations have a history of success in thousands of wells—in a multitude of various applications—in most all types of formations... extending the natural producing life of oil and gas wells and employing a conservation program of natural energies for oil production economy.

Specialized Halliburton tools and equipment, offers flexibility in cementing operations which can help accomplish many special purposes and help solve many special remedial problems.

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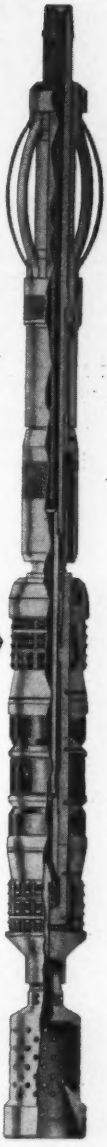

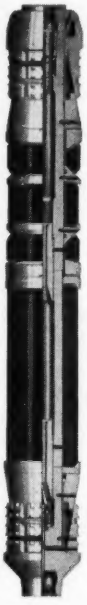

"DM-DC" DRILLABLE SQUEEZE PACKER/BRIDGE PLUG WITH CIRCULATING VALVE... the industry's most versatile tool for either squeeze cementing, or as a bridge plug!

For general application in any well, regardless of depth or pressure... effects a positive fluid shut-off from either direction... of simple design and easily run in and set on tubing, drill pipe, drilling or sand line.

Type "DM" is constructed of high strength "drillable magnesium alloy" for squeezing or temporary bridge plugs... type "DC" is made of "drillable cast iron" for squeezing or permanent bridge plug and may be used as a temporary bridge plug when desired.

The "DM-DC" Drillable Squeeze Packer is easily converted into a bridge plug by dropping a Sealing Plug through tubing into the packer or installing a Permanent Sealing Plug before running tool into the well... Shut-off Sealing Plug may be pumped down through 2" or 2½" tubing and shuts off in the packer. The rubber cup helps to prevent contamination between fluids.

OPEN HOLE "DM-DC" DRILLABLE Squeeze Packer with the addition of an extension mandrel and a long rubber seal element. Used extensively in hard open hole formation near to true bit size, and has been set in depths of 11,000 ft. holding pressures up to 5,000 psi. Simple setting procedure is the same as in the regular squeeze packer and bridge plug but cannot be set by any type of setting tool run on a wire line.

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one-half mile west of production, the well was drilled to a total depth of 6800 feet and cemented 5½" casing at 6410 feet. On the northeast quarter of Section 29-15n-2e in Sutter County, Atlantic is preparing to move in on Unit L No. 2. The well is about ¾ mile southeast from production.

Marysville-Buttes Completion

Buttes Gas & Oil Co. completed Buttes Community No. 23 flowing 19,100 mcf of gas through a ⅜" and ½" bean. Flow pressures were 1940/2275 psi. The well is producing from 233 feet of zone perforated at intervals within 4931-5299 feet. Total depth is 7200 feet with 5½" casing cemented at 7093 feet. Location of the well is on the southeast quarter of Section 4-15n-1e in Sutter County. Buttes Community No. 24, located on the northwest quarter of Section 4-15n-1e, is drilling below 3100 feet.

Brazos Completion

Brazos Oil & Co. Co., Operator, completed Leiske No. 1 flowing 900 mcf of gas from the Leiske perforations 2797-2820 feet through a 12/64" bean with 1140 psi flow pressure. From the Midland Sand perforations 3505-3520 feet flow was 2000 mcf gas through a ¼" bean and 1300 psi flow pressure. Located on the northeast quarter of Section 6-4n-5e in San Joaquin County, the well was drilled to a total depth of 3800 feet and cemented 4½" casing at 3641 feet.

Grimes Outpost Test

Atlantic Oil Co. has staked location for Sutter Unit L No. 1 on the northwest quarter of Section 29-15n-2e in Sutter County. Nearest production is ½ mile north.

Socony Mobil Gas Test

Socony Mobil Oil Company, Inc. has staked location for Socony Mobil-Section 20 Unit No. 4 on the southwest quarter of Section 20-13n-2e in Sutter County. The wildcat is 2½ miles east of the one-well Lewis Gas Field.

Atkinson Wildcat

T. A. Atkinson is moving in rotary to drill Tisdale Unit No. J-3 on the southeast quarter of Section 8-14n-2e in Sutter County. The test is 3000 feet northwest of his Atlantic-Giusti No. 1 recently completed as a new field discovery in the Grimes Bypass area.

Shell Test Abandoned

Shell Oil Company abandoned Antoine No. 3-6, its Merced County deep test, at a total depth of 12,071 feet. Shell's test was located in the Santa Rita area on the southwest quarter of Section 6-11s-13e, seven miles southwest of the Chowchilla Gas Field.

Sutter County Wildcat

Atlantic Oil Company is drilling below 2500 feet on Sutter Unit No. N-3 located on the southeast quarter of Section 33-15n-2e in the Grimes Bypass area. The location is 2½ miles northeast of present production.

Ben Owens Wildcat

Ben Owens Drilling Co., Operator, is ready to spud Thompson No. 2 located on the southwest quarter of Section 33-5n-8e in San Joaquin County. The wildcat location is five miles northeast of the Lodi Gas Field.

Solano County Wildcat

Laurence A. Green, Operator, is moving in rotary to drill Crocker Estate No. 2 located on the northwest quarter of Section 25-6n-2e. The location is 4000 feet northeast of the Maine Prairie Gas Field.

New Field Discovery

Occidental Petroleum Corp. completed Lathrop Unit No. A-1 flowing 80,000 mcf of gas per day on an absolute open flow potential test. Through a ¾" bean flow was 11,471 mcf with pressures of 1600/2700 psi and through a ¾" casing bean flow was 16,119 mcf with a flow pressure of 2600 psi. Shut in pressures were 3200/3200 psi. Located on the southeast quarter of Section 5-1s-6e in San Joaquin County, the discovery was drilled to a total depth of 7860 feet and cemented 5½" casing at 7856 feet.

Shell Outpost Test

Shell Oil Company is preparing to move in rotary to drill Cameron-Schohr No. 1 on the northwest quarter of Section 16-13n-1e in Colusa County. The location is ½ mile south of production at the Kirk Gas Field.

Occidental Outpost

Occidental Petroleum Corp. is grading roads and rig site for Lathrop Unit-B No. 1 to be drilled on the northwest quarter of Section 5-1s-6e in San Joaquin County. The location is almost one mile northwest of Lathrop Unit-A No. 1, the Lathrop Field discovery well. The discovery flowed 80,000 mcf of gas on an open flow potential test.

Intex Gas Test Abandoned

Intex Oil Company drilled to a total depth of 5200 feet on Ryer Island No. 1 and abandoned the well without testing. Wet sand was logged from 4592-4625 feet. The wildcat was located on the southeast quarter of Section 4-4n-3e in Solano County.

COASTAL AREA

Union Outpost Test

Union Oil Company of Calif. is drilling below 1500 feet on S.P.S. No. 1 located on the southeast quarter of Section 11-3n-21w. Located within the city limits of the town of Santa Paula, the test will be drilled to about 4000 feet.

Somis Test Drilling

San Roque Oil & Exploration Co. is drilling below 5000 feet on Beryl-wood No. 1 located on the southeast quarter of Section 11-2n-20w in Ventura County. It will be drilled to about 7000 feet.

Tidewater Outpost Test

Tidewater Oil Co. is preparing rig site for G.W.P. No. 57-24 located on the southeast quarter of Section 24-9n-33w in Santa Barbara County, ½ mile south of production.

Bardsdale

Thornbury, Geis and Hunter are grading roads and rig site for King No. 10 located on the southeast quarter of Section 1-3n-20w in Ventura County. It will be a 7500-foot test.

OTHER AREAS

Alaska

Standard Oil Company of Calif. and Richfield Oil Corp. complete S.R.U. No. 212-27 as a deeper pool gas discovery flowing 10,000 mcf of gas per day from the interval 7628-7635 feet. Located on the northwest quarter of Section 27-8n-9w, the well was drilled to a total depth of 7800 feet and cemented 5½" casing to bottom.

Pan American Petroleum Corp. has staked a location for West Fork

land No. 1 on the southeast quarter of Section 21-8n-14w. The location is about thirty miles west of the Swanson River Field, across the Cook Inlet. Skelly, Phillips and Sinclair Oil Companies have an interest in the development.

Standard Oil Company of Calif. and Richfield Oil Corp. completed S.C.U. No. 34-5 flowing at a maximum efficiency rate of 600 b/d of 37 gravity clean oil from several perforated intervals within 10,321-10,650 feet. Total depth is 11,216 feet. The well is located on the southeast quarter of Section 5-7n-9w.

Arizona

Ram Oil Company is moving in cable tools to drill No. 1 on the southeast quarter of Section 29-11n-31e in Apache County. It will be a 2000-foot test.

E. B. La Rue, Jr. is drilling below 4000 feet on Dinne No. 1, a Walker Creek wildcat located on the northwest quarter of Section 23-41n-26e in Apache County. The well will be a Pennsylvanian test at about 5100 feet.

Montana

Continental Oil Company is drilling below 4500 feet on Conoco-NPA-29 No. 2 located on the southwest quarter of Section 29-7n-60e in Fallon County. The location falls about four miles southeast of the Pennel Field and will be drilled to approximately 8850 feet to test the Ordovician.

Cardinal Petroleum Company, Signal Drilling & Exploration Co., Rancho Oil Company, are preparing to drill Corcoran-Gray-Darrow No. 1, the first of two Liberty County wildcats. Located on the southwest quarter of Section 6-36n-6e, the well will test the Madison. State-Darrow No. 1 is located on the southeast quarter of Section 9-37n-5e and will also test the Madison. Both tests are outposts to the Bears Den Field.

Skelly Oil Company has announced locations for two Teton County wildcats. Both will test the Madison. Johns No. 1 will be drilled on the southeast quarter of Section 29-27n-6w and will go to about 3100 feet. On the southwest quarter of Section 25-27n-4w, Jorgerson No. 1 will test the Madison at about 2150 feet.

New Mexico

Roy Owen completed Donella No. 1 as a new discovery flowing 65 b/d clean oil from the Gallup perforations 4300-4314 feet. The wildcat logged the Gallup at 3887 feet, drilled on to a total depth of 4494 feet and cemented 4½" casing at 4476 feet. The completion is located on the southeast quarter of Section 3-29n-15w.

Pure Oil Company is preparing rig site for Federal H. No. 1 to be drilled on the northeast quarter of Section 24-28s-2w in Dona Ana County. Pure's wildcat is in the Cruces Basin area and will be a Granite test at about 10,000 feet.

Sunray Mid-Continent Oil Co. completed Amargis No. 1, its San Juan County wildcat, flowing 20 b/d as a new field Gallup discovery from the interval 4060-4232 feet. Located on the northwest quarter of Section 33-30n-15w, the well has a total depth of 4330 feet and has 5½" casing cemented at 4329 feet. Top of the Gallup was placed at 3725 feet.

Utah

Continental Oil Company is preparing to drill ahead on Unit No. 1 after cementing 24" conductor pipe at 40 feet. Located on the northwest quarter of Section 22-22s-19e in Grand County, the well is a scheduled Devonian test at 14,700 feet of the Salt Valley area. If Continental is successful in reaching the proposed depth, it would be the deepest well drilled in the State.

The Superior Oil Company has staked locations for two wildcat tests, one in Emery County and one in Grand County. Unit No. 14-5, located on the southwest quarter of Section 5-26s-17e in Emery County, will test the Mississippian at about 6500 feet. On the Moon Ridge Unit in Grand County, Unit No. 31-15 will be drilled on the northeast quarter of Section 15-16s-21e. It will test the Morrison at about 9800 feet.

Washington

Port Angelus Oil and Gas Co. is drilling below 500 feet on Dilling No. 1 located on Section 14-30n-5w in Clallam County, near the town of Port Angelus.

Wyoming

Continental Oil Co. has staked location for its first test on the Gypsum Creek Unit in Big Horn County. There are 7119 acres in the Unit. Unit No. 32-1 will be drilled on the northeast quarter of Section 32-58n-96w and will be a Tensleep test.

Texaco Inc. is moving in tools to drill State No. 3, a West Oregon Basin wildcat, for a test of the Big Horn at about 5880 feet. Texaco's location is on Lot 60 of Section 36-51n-101w in Park County.

Davis Oil Company is grading roads and rig site for Reel No. 1 on the southwest quarter of Section 28-49s-69w in Campbell County. The wildcat will test the Minnelusa at about 9000 feet and is northwest of the Raven Creek Field.

New A.A.O.D.C. Officers

William P. Clements, Jr., was elected 1962 president of the American Association of Oilwell Drilling Contractors at the association's annual meeting in Houston. Mr. Clements, president of The Southeastern Drilling Corporation, Dallas, succeeds John J. Moran of Wichita Falls.

Charles H. Todd, The R. W. Rine Drilling Company, Wichita, Kansas, was elected national vice president.

Among the other officers elected were: Executive vice president, Warren L. Baker, American Association of Oilwell Drilling Contractors, Dallas, Texas; vice president—California, Norman Haney, Haney and Williams Drilling Company, Long Beach, California.

Jay Curts Dies October 12

Jay W. Curts, 56, west coast manager of Gulf Publishing Company for nearly 25 years, died October 12 at his home in Pasadena following a long illness. He was born in Cincinnati, Ohio. He attended University of California and, upon graduation, moved to Dallas, Texas, where he joined the advertising department of the "Dallas Dispatch." He had advanced to the position of advertising manager of the paper when, in 1937, he resigned to join the Gulf Publishing Company. In November of that year he moved to California to become manager of the company's west coast office. He leaves his wife, Myrtle, a daughter, three grandchildren, three sisters and a brother.

THIS LAUGH

"And then," said the former service man, "my wife hit me with an oak leaf.

The judge suggested that couldn't have hurt very much.

"Well, you see," explained the witness, "the leaf was from the center of our dining room table."

Boss: "I want to get this message to every married woman in the country."

Advertising Manager: "There is only one sure way to do it. We'll address our letters to the husbands and mark them 'Personal and Private'."

An expert, who claims to know, says that the male jackrabbit can run 45 miles per hour. The female 43. I guess that clears up the rabbit question.

An Indian petitioned a judge of a Montana court to give him a shorter name. "What is your name now?" asked the judge.

"Chief Screeching Train Whistle," said the Indian.

"And to what do you wish to shorten it?" asked the judge. The Indian folded his arms majestically and grunted, "Toots."

It was on Highway 99. A flaming redhead was cruising along in a Thunderbird at about 90 miles an hour. A motorcycle cop stopped her and inquired:

"Say, lady, didn't you see the speed limit sign back there?"

"Why, yes, officer," replied the beautiful one. "I thought it said 99 miles per hour."

"Sister," the cop sighed, "I'm glad I caught up with you before you turned into Highway 395."

OFF!!

Jo—"This new book on health say that bathing alone won't keep yo healthy."

Flo—"I don't care what the book says; I'm going to keep right on bathing alone."

One of these days somebody's going to come up with a book on "How to Get Out of Doing It Yourself."

"Where did you get that fine new hat?"

"I bought it ten years ago. Seven years ago I had it newly blocked. Three years ago it was dyed black and a year before last I had a new band put around it. Then last year I exchanged it at the restaurant."

We went dancing in a night club so crowded I was dancing cheek to cheek with the girl behind me.

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